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ORIGINAL COMMUNICATIONS.

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THE NEED OF A STANDARD IN VOICE PRODUCTION.*

W. J. HENDERSON, NEW YORK CITY.

Ferrein's treatise on the vocal organs was published in 1741. But it was more than half a century later that his ideas appeared to have any general influence. In the first thirty years of the nineteenth century several works on the same subject were put forth. Not, howver, till Garcia invented the laryngoscope, in 1855, was there any real scientific application of the study of physiology to singing. Since that time the growth of vocal science has been large and methods of investigation of the formation of the singing tone have advanced far beyond the fondest dreams of Garcia.

Cerone, a Spaniard, published in 1613 his "Il Melopeo," a treatise on the rules of singing. In it we learn that at this period chest and head registers were recognized, that the classification of voices according to their timbers had been made, that emission of tone had been studied and reduced to a system, and that style and hygiene of the voice were both considerations in the daily curriculum of the studios. Lest we permit ourselves to be astonished we must recall the historical fact that Pope Sylvester founded singing schools in 1314, and that the church music was taken out of the hands of the congregation and placed in those of a trained choir as early as 367. In Cerone's day all the vocal ornaments performed by Tetrazzini were familiar to such famous singers as

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*Read by invitation at the annual meeting of the American Laryngological, Rhinological and Otological Society, May 13, 1912.

Victoria Archilei and Leonora Baroni. In fact, the whole foundation of the so-called "Italian method" had been laid. The codification of its laws was completed in the course of the seventeenth century, and when the great schools of 1700 were sending forth such famous singers as Farinelli, Caffarelli, Cuzzoni and Faustina, everything was known about singing that is known now—except the physiological laws. Of those, nothing whatever had been discovered, yet these schools produced the greatest singers the world has ever heard.

Now what is the matter? Is the physiological basis of singing of no practical value to the singing teacher? In the time of Porpora, Leo, Redi, and the other eminent teachers of the early eighteenth century the empirical method of instruction was the only basis of vocal art. Let us, if you please, call it the suggestive method. Its fundamental principles are set forth in Tosi's treatise. To allow the voice to flow freely without nasality and without throat constriction was the prime requisite. This was taught by example and by helping the pupil to acquire mental conceptions of the required tone. He was shown that the most important of all things for him to accomplish was perfect freedom. He must never let his throat or his nose interfere. Which, of course, meant that he must never shut off any of his resonance chambers or exert any muscular effort antagonistic to a perfectly normal condition of the organs. This empirical, psychological or suggestive method of teaching was the exclusive basis of vocal art up to the time when the physicians began to publish their descriptions of the tone-forming organs. During the years when the empirical method was employed apt pupils acquired a vocal method so excellent as to enable them to conquer the world. Shall we, therefore, say that the revelation of scientific knowledge of tone-formation has worked injury to vocal art? For we know that ideal tone-production is excessively rare among the singers of to-day.

The fault is assuredly not to be laid at the door of science, for the progress of science makes truth clearer. It is undeniable that up to the present we have not acquired a complete body of indisputable scientific laws, for the doctors do not yet agree. We cannot hesitate, however, to declare that among the differences as to details which are found in the publications of voice investigators we have yet to find any final demonstration of basic error in the musical conception of tone acquired by the first great masters of song.

What is it, then, that is wrong? I decline to assume the responsibility of deciding. But while for some centuries the psychological or suggestive method of teaching was the only one in use, there has not been a time when the scientific or physiological basis has been exclusive. I will venture to express my belief that it never can become the exclusive basis, but no educated man will deny that its acquired facts demand recognition by voice teachers. The only certain knowledge is that which is capable of scientific demonstration.

Every scientist will agree that an accurate and informing terminology is a first desideratum of knowledge. It is there, I think, that the chasm between the teacher and the physicist remains as wide as it was in the beginning. Too many vocal teachers have been alarmed at the apparent intricacy of the physiology of the organs of tone. They have perhaps looked timidly into some of the simpler treatises, such as Sir Morell Mackenzie's "Hygiene of the Voice," have gathered a few uncertain ideas, and have forthwith endeavored to apply them to their practice.

They have struggled vainly to reconcile their construction of the meaning of the time-honored figurative terminology of their profession with some scientific facts set forth by physicians. They have had a stock of names, such as chest and head registers, invented in the childhood of voice study in order to designate ideas conveniently which could not then be designated scientifically. They have tried to make these terms square with physiological theories. They sometimes inform their pupils that head-tones find their entire resonance in the frontal sinus and chest-tones in the lower pharynx. Some have even located tones in the sphenoidal sinus. I take it for granted that no laryngologist within the sound of my voice believes that any beautiful and correct singing-tone can be produced without a harmonious operation of all the resonating cavities.

The pupil who forms a picture of his highest tones as vibrating in the topmost resonance chambers sometimes arrives at a notion that these chambers are directly concerned in establishing the pitch of the tone, and thus we find not only some students, but also some teachers, talking learnedly about throwing the upper tones up into the head in order to get them at all. Such ideas rest upon insufficient scientific information and upon a worn-out and misleading terminology. It is pretty generally accepted in these days that pitch is determined at the seat of tone formation, the larynx, and that the resonating cavities are not creators, but qualifiers.

It seems to me that the path out of the wilderness must be opened by the co-operation of scientific investigators of tone-formation. It is for them to formulate the vital facts and to present them in language which will clear away all confusion of terms and consequent confusion of ideas. Every singing teacher ought to be thoroughly acquainted with the physiological basis of voice instruction. Every medical student of vocal organism should recognize the boundaries which separate the physiological laws from the psychological. In this way a general and authoritative science might be built up, and upon it a correct method of teaching tone-production. An end would be put to the ridiculous claims of those teachers who assert that they have a method different from any other and therefore far better. The real value of the teacher would be determined by his skill in teaching established truths, not by his assurance in boasting.

This blissful state can be attained only by a closer union between teachers of the gentle art of voice production and physicians and other scientists who make a special study of the operation of the vocal organs. The radical evil of vocal teaching at this time is the endeavor of singing teachers who do not understand the physiology of the throat to make their pupils get results by the voluntary movement of certain muscles. It is susceptible of scientific demonstration, unless I am utterly mistaken, that many essential muscles in the formation of tone are involuntary muscles and cannot be directed by the will.

But there are many other muscles which can be directed by it and which can be brought to bear on the organs of the throat in such a way as to interfere with normal tone-formation. And it is these muscles which some teachers are causing their pupils to operate incorrectly, to the enormous detriment of their singing.

Exposure of this evil lies within the province of the scientific investigator. But the teacher must be sufficiently fond of the truth and not too devoted to his own ill-grounded claims to originality to accept a scientific fact when it is held up before his eyes.

I may perhaps be pardoned if in closing I refer to my own calling. The exigencies of daily newspaper writing preclude the possibility of detailed or scientific voice analysis; but it is my humble opinion that the generalizations which constitute the vast bulk of newspaper comment might, without great difficulty, be brought into closer harmony with scientific truth and by precisely the same means as teaching should be.

Hotel Gerard.

THE RESULT OF EIGHTEEN YEARS OF RESEARCH WORK ON VOICE PRODUCTION AND ANALYSIS.*

PROF. WM. HALLOCK AND DR. FLOYD S. MUCKEY, NEW YORK CITY.

Our belief in the results of any investigation should be based, largely, upon the method used in carrying it out. All scientists are agreed that there is but one mode of procedure by means of which we can be at all certain that we have arrived at the truth in any investigation. This is what is termed the "Scientific method." We present here an abstract of this showing not only the different steps necessary to be taken, but how we have applied it to our inquiry into the voice and its mechanism.

SCIENTIFIC METHOD.

A. Definition—air-waves.

B. Analysis.

C. Classification—I. Pitch—Length of wave. II. Intensity and carrying power—height of wave. III. Quality—number and relative intensity of partial tones.

D. Relationships and sequences of classes of facts—I. 1. Length of vocal cord. 2. Weight of vocal cord. 3. Tension of vocal cord. II. 1. Extent of swing of cord. 2. Resonance. III. 1. Segmentation of cord. 2. Resonance.

E. Natural law—relaxation of extrinsic muscles.

It is seen that the first step is definition, that is we define or limit our field of research. Voice is defined as sound. Sound is defined as air-waves. Voice-production, therefore, is simply the production of air-waves and is subject to the mechanical laws which govern this. Complete knowledge of a subject implies the ability to give a complete description of it. A complete description necessitates an analysis of whatever we are describing; hence analysis is the second step in the scientific method. The voice is always a complex tone, that is, it is composed of several tones varying in pitch and intensity. These are called the partial tones or the fundamental overtones of the voice, a complete knowledge or description of the voice, therefore, necessitates a separation of it into its partial tones and a record of this separation, so that we can describe each one separately and all of them collectively. To do this we made use of the Helmholz spherical resonators and a greatly modified form of the Koenig monometric capsule. We then devised a method of photographing the motion of the little monometric flames and our analysis and record were complete.

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*Read by invitation at the annual meeting of the American Laryngological, Rhinological and Otological Society, May 13, 1912.

Figure 1 is a front view of the apparatus showing the resonators, a glimpse of the flames, and the position of the camera.

Figure 2 is another view, showing the manometric capsules, their little flame reflected in the revolving mirror and the sliding plate holder at the back of the camera.

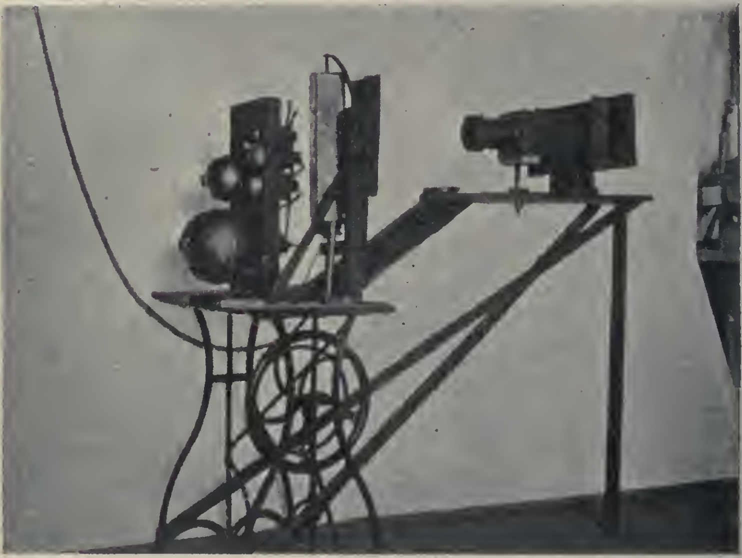


Figure 1.—General view of the apparatus, showing the resonators, the rotating mirror and the camera at the back.

Figure 3 is the section of a resonator and its manometric capsule showing how the vibrations of the air are changed into the vibration of the little flame. The flames were focussed in a small slit at the back of the camera. By means of a sliding plate-holder shown in Figure 2, a sensitive plate was drawn quickly across this slit giving a trace of each flame and its motion on a different part of the plate and the record was complete.

Figure 4 shows such a record.

Our apparatus is tuned to the base C-128. V. p. s. The overtones are in the ratio of 1 in the fundamental to 2, 3, 4, 5, 6, 7, respectively in the overtones. A peculiarity of the spherical resonator is that it is very selective. It will only respond, normally, to a single pitch. A series of these tuned to the pitches represented by the partial tones of the voice will thus separate them one from the other and the analysis is made. The capsules change these air-waves into flame vibrations of the same rate while the camera gives us a permanent record. Our apparatus is then analagous to that of the ear. The resonators correspond to the external ear. The capsules to the middle and internal ear which change the vibration of the air into vibration of nerve filaments while the sensitive plate corresponds to the brain-cells where the record is finally made. Our apparatus, however, gives much more definite results because we have a resonator for each partial tone, a membrane to respond to each series of air waves, and finally a record which may be appreciated by the sense of sight by means of which a clear and complete description may be given. This gives our next step in the scientific method, viz: classification of facts. A study of this voice analysis shows us that the pitch varies with the length of the wave and our first class of facts is, pitch—length of wave. Our experiments demonstrated that the fundamental tone or the one with the highest wave had the greatest carrying power and that this diminished in direct proportion to the lessening of the height, hence our second class of facts is: intensity and carrying power-height of

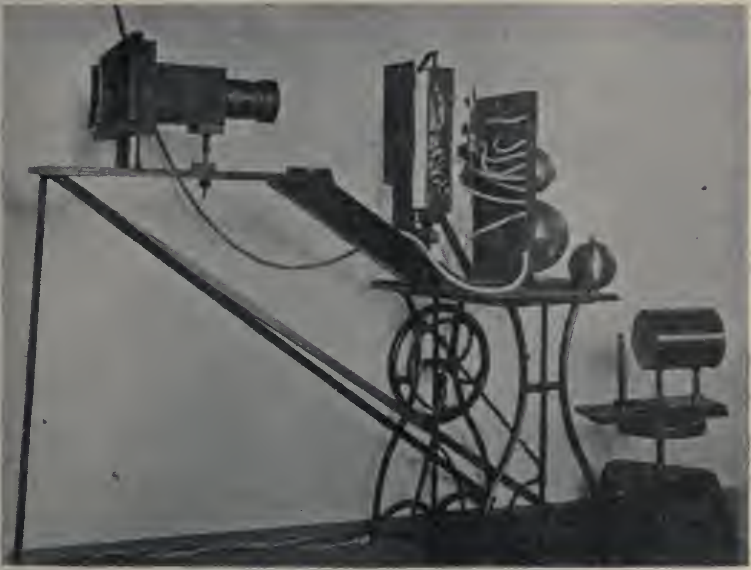


Figure 2.—General view showing the capsules and their attachments, the flames reflected in the mirror, and the sliding plate-holder at the back of the camera. A spherical resonator stands on the corner of the table and our standard tuning fork with its cylindrical resonator is on the low stool.

wave. Our experiments also showed us that any change in the number or relative intensities of the partial tones made a corresponding change in the quality and hence our third class of facts is quality-number and relative intensities of the partial tone. A critical examination of this voice photograph shows that there is nothing further to describe and hence our classification is complete. Every fact which has any bearing on the voice may be placed under one of these three classes.

Our next task was to trace out the causes which lie back of each class of facts and to show how these different series of causes are related to each other. This comprises the fourth step in the scientific method. What is it that determines the length of the wave or the pitch of the tone? To answer this question we must know to what class of instruments the vocal apparatus belongs. An exhaustive examination of the whole range of musical instruments reveals the fact that only the characteristics of string instruments will satisfy the conditions involved in the vocal mechanism. The pitch of the fundamental tone is determined by the length, weight and tension of the vibrating cord. These are the factors which regulate the pitch of any string. The larynx is the pitch mechanism and is composed of a number of cartilages joined together in such a manner as to be movable upon each other. These serve as levers upon which the intrinsic muscles act to give us the changes in length, weight and tension for variations in pitch. Figure 5 repre-

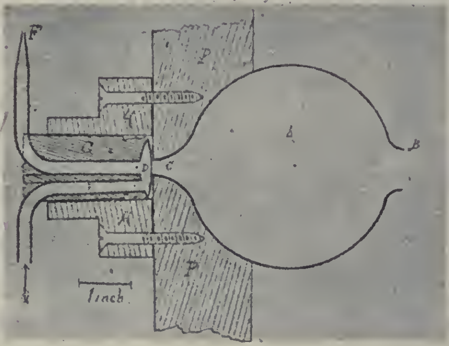


Figure 3.—Section of resonator and its manometric capsule. A. Resonator. B. Mouth of resonator where air-waves enter. C. Small extension through which the air-waves strike upon the rubber drum between D and C. D. Space behind the drum to which the gas enters through the tube E, and from which the gas passes out and burns at F. G. Wooden plug carrying gas tubes and hollowed out to form the space D. The rubber is stretched and tied over the end of G. H. Block to hold G. P. Plank on which the whole is mounted.

sents some photographs of the vocal cords which shows the lessening of the vibrating length of the cord in raising the pitch. Figure 5 shows four photographs of the vocal cords, looking down upon them. The front attachment is out of sight at the bottom of the pictures, being covered by the epiglottis; *l* is the cords themselves, with the apparent slit, *k*, between them; at the back, *bb* are the arytenoid cartilages. The "vocal muscle" is attached to the outside of the arytenoid cartilage at a point near *n*. It extends forward through the thick part of the cord and is attached near the cord to the front of the thyroid. When these muscles are contracted they cause the arytenoids to rotate around a point near *bb*, throwing the forward ends, *o*, inward toward each other. This rotation of the arytenoids results in a shortening of the effective length of the cords and a consequent raising of the pitch. In I and II the person is singing low G, and the whole length of the cord is in vibration. III shows the position when the octave G (bass clef) is sung, and IV when G (middle G) is the tone. A comparison of II, III, and IV, especially as to the position of the crosses marking

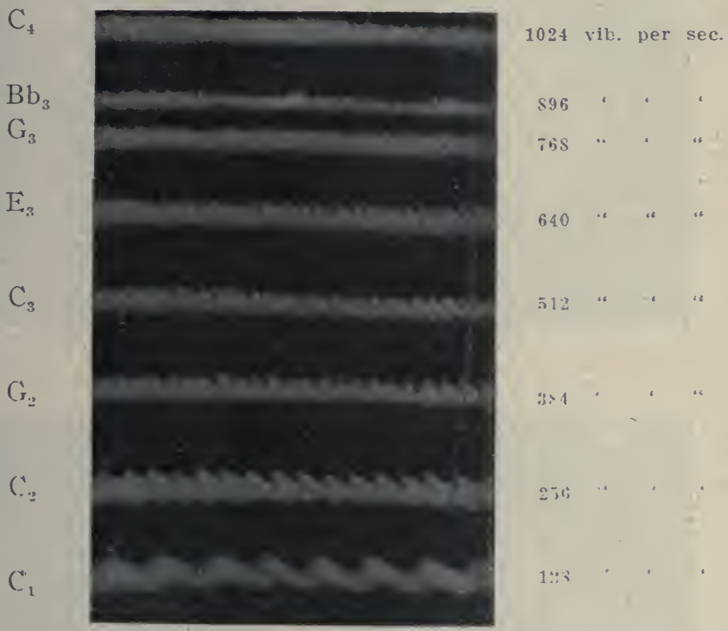
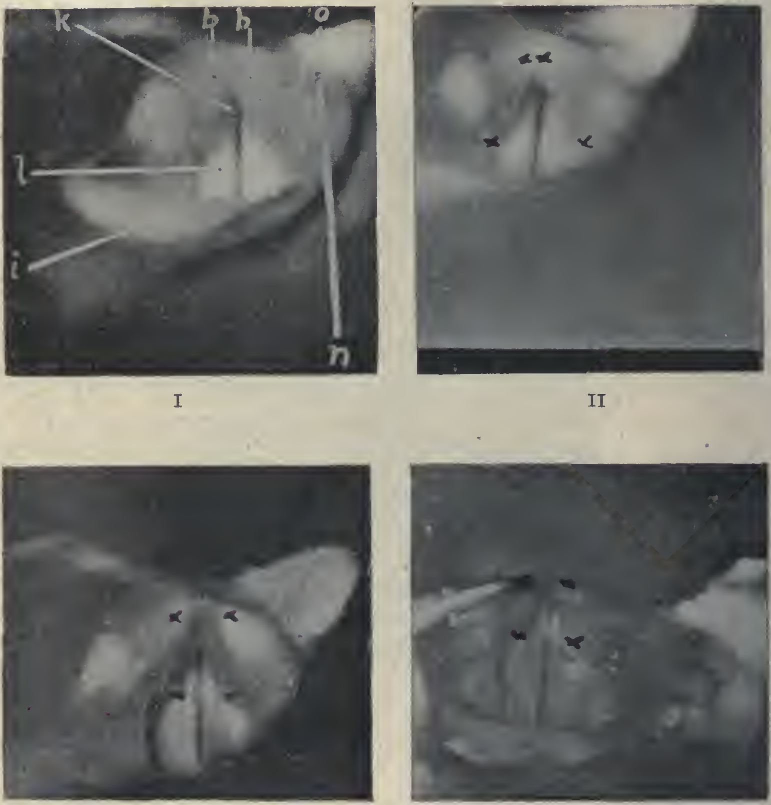


Figure 4.—Photograph of the motion of the flames while singing the vowel a as in father. The lower line is the fundamental, and the others are the 1st, 2d, 3d, etc., overtones in the order of their pitch. One wave of the fundamental corresponds to two in the first overtone, three in the second, four in the third and so on.

the front and rear points of the arytenoids, will show how the cartilages are rotated and the cord shortened as the pitch rises. The rotation of the arytenoid cartilages and the consequent shortening of the vibrating cord is effected by contraction of the thyro-arytenoid muscle which also sends fibers into the substance of the cord itself.

Figure 6 is a schematic representation of the vocal cord, showing the location of the vocal muscle *m*, and how it sends its fibers into the body of the cord. When *m* is uncontracted, or but slightly so, the cord may vibrate from the edge as far back as *r*, but as *m* is tightened more and more it holds the vocal cord first as far as *s*, then *t*, and finally for the highest tones (IV, Figure 5) only the part between *u* and the edge *k* is allowed to vibrate, giving a much lighter string and thus helping to get a high pitch with a minimum of tension.



I

II

III

IV

Figure 5.

Figure 7 shows three views of the larynx: I, a section vertical from front to back; II, the left side of the cartilages; III, the left side with some of the muscles. *e* is the large thyroid cartilage, the front point of which forms the "Adam's apple," just behind which is the front attachment of the vocal cords. This cartilage is hinged upon the cricoid, *a,* by two projecting horns, *d.* Upon the back, top part of the cricoid sit the two arytenoid cartilages *b,* which form the rear attachment of the vocal cords. The thyroid is held in place by muscles running up to the soft palate and head, and down to the collar-bone. When the muscles *h* are contracted, the front edge of the cricoid is drawn up, closing the niche *c,* and tilting on the hinge *d.* The back top of the cricoid, with the arytenoids, is thereby carried backward, lengthening the cords slightly and stretching them more tightly.

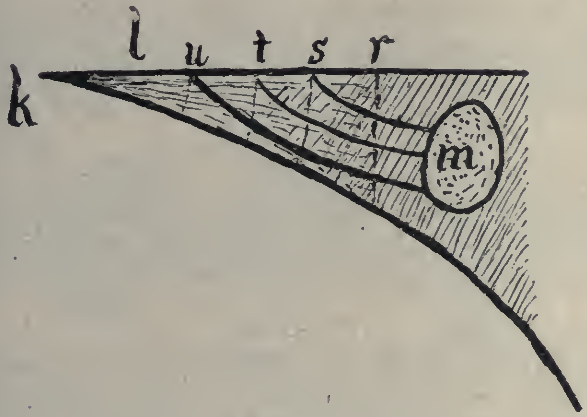


Figure 6.

It will be seen that we have in the larynx the means for controlling the three factors which determine the pitch of a string—length, tension, and weight. Moreover, the tuning mechanism of a reed, plate, or membrane is lacking. Actual analysis shows the overtones of the vocal cords to belong to the series of a string, and not to that of a reed, plate, or membrane. We are thus forced to the conclusion that, both in its action and in its resulting tone, the larynx is a string instrument. The fact that the pitch relation of the overtones to the fundamental is so absolutely definite, never varying so much as a vibration from the ratio of one in the fundamental, to 2, 3, 4, 5, etc., in the overtones, can be accounted for in no other way than by the string segmentation of the vocal cords.

The height of the wave (intensity and carrying power) is controlled by two factors, viz: the extent of swing of the cord and resonance. Of these two resonance is of vastly more importance. While the increased swing of the cord may amplify the wave twenty-five or thirty fold, it can be demonstrated that resonance will increase the height several hundred fold. Increased swing of the cord is brought about by increased breath or pressure and hence the expenditure of energy.

Full use of resonance can only be attained by absolute lack of effort. It is a free gift. This will be explained later. Resonance, then, is *the* important factor in intensity and carrying power or the second class of facts.

In the etiology of quality or the third class of facts, we also have two factors: segmentation of the vocal cords and resonance. It has been proved that the cords segment in the same manner as the string and Figure 8 is a photograph of a string while vibrating showing its segmentation.

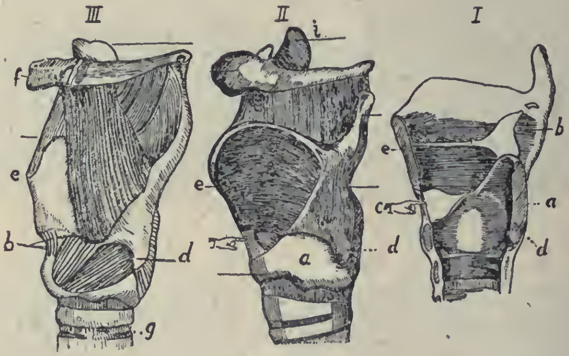


Figure 7.

It is now clear why the overtones must bear the same pitch relation to the fundamental no matter what the pitch of the fundamental may be and how impossible it is even to build an apparatus to produce these overtones even for a single pitch to say nothing of the whole range of the voice. We know that no other overtones are present because we have listened for them with resonators not only through the whole range of the voice, but of its overtones as well. The amplitude of the waves composing the various partial tones is very small when they leave the cords and without reinforcement would have little or no effect on the auditory apparatus. They are made larger or amplified by the air in the resonance cavities and this is what we term resonance or the second factor in quality. For our purpose resonance may be defined as the re-enforcement of a tone by a quantity of more or less confined air, the inherent rate of vibration of which is identical with that of the tone re-enforced. Such a quantity of air receiving successive impulses from the vibrating object comes into vibration itself, thus giving to the surrounding air a much greater amplitude of vibration and consequently greater intensity and carrying power of the tone. The jew's-harp is an excellent illustration. In it the mouth cavity re-enforces the tones of the little tongue. In fact the size of the cavity in this case, selecting its own pitch from the complexity of sounds produced by the harp, and so re-enforcing it, makes it the characteristic tone, which varies with the size and shape of the mouth cavity. To a lesser extent do the cavities of the mouth and nose act selectively upon the tones produced by the vocal cords, thus modifying the quality of the tone, as in articulation, but never determining the characteristic pitch (fundamental), which is entirely controlled in the larynx. This point will be more clearly brought out when we consider interference. Resonance, then, becomes the most important element in voice-production as it is the chief factor in both intensity and carrying power and quality. It is necessary, therefore, to know how it may be obtained or what material is available in the vocal mechanism for its production. Sounding-board effects are impossible, as dryness and homogeneity of texture, the two essential features of these are not found in animal tissues. An opening of considerable size so that

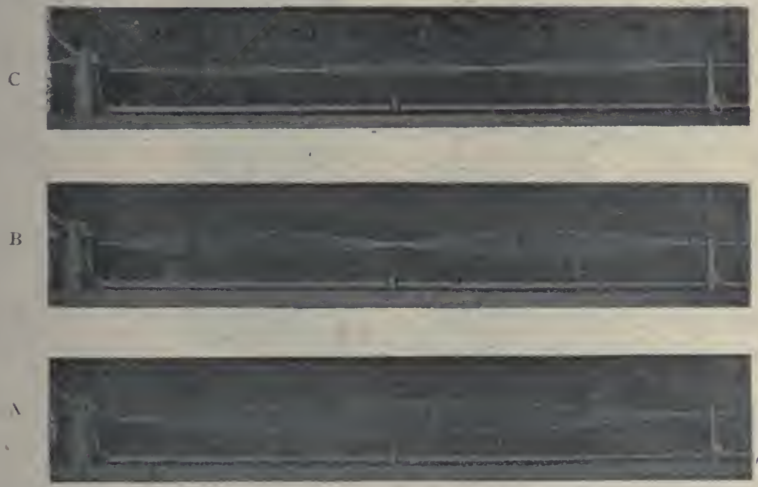


Figure 8 illustrates vibrating string showing segmentation. A string vibrating in this way would give a pure and simple tone. B shows the same string as A, only now vibrating to the first overtone. In C we have the second overtone the fifth above the octave, with two nodes and three segments, and with one-third the effective length of A.

the air-waves may pass in and out freely is the essential feature of resonance cavities. During voice production the pharynx, mouth and nasal cavities are the only ones possessing this characteristic and hence the air in them is our only means of reinforcing the air-waves set up by the vocal cords. The management of these cavities, therefore, becomes of the utmost importance. An exhaustive study of use made of these cavities and the results as shown by our voice analyses demonstrate that every particle of space is needed to produce the desired results. In the nasal spaces are the small cavities essential to the reinforcement of the higher partial tones. The combined space represented in the pharynx, mouth and nose gives the large cavity essential to the reinforcement of the fundamental the *sine qua non* of good quality. The cavities of the lower and upper pharynx and the nose furnish a permanent factor in reinforcement. The size and shape of the mouth cavity made variable by the action of the tongue and lips enables us to reinforce the different combinations of partial tones essential to the production of the vowel sounds. The complexity of the cavity as a whole ren-

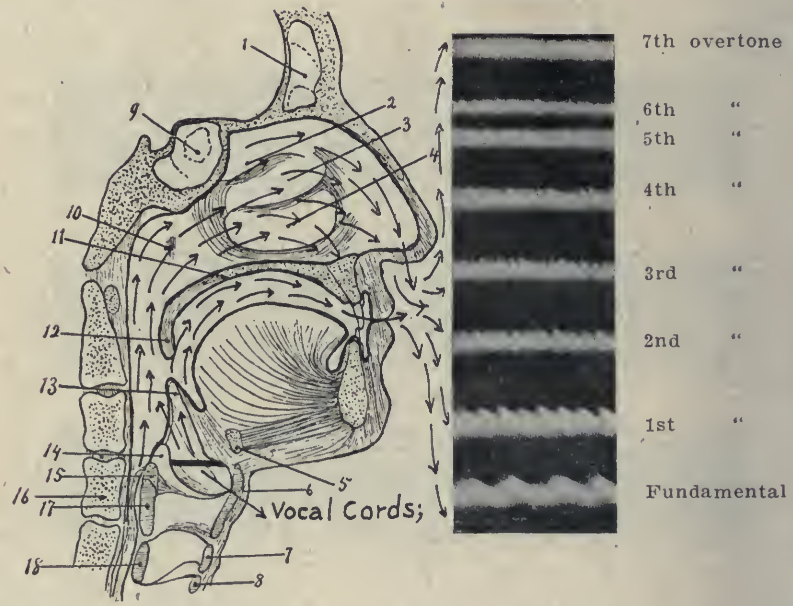


Figure 9.—Vertical section of the head to show location and relative size of the resonance cavities. 1. Frontal sinus; 2, 3, and 4. Turbinated bones; 5. Hyoid bone; 6. Thyroid cartilage; 17. Cricoid cartilage; 7 and 18. Top ring of the trachea; 9. Sphenoidal sinus; 10. Epi-pharynx; 11. Hard palate; 12. Soft palate; 13. Epiglottis; 14. Arytenoid cartilage; 15. Arytenoideus muscle; 16. Vertebra.

ders it non-selective and thus capable of reinforcing a wide range of pitch. Large size and complexity of shape of our resonance space is essential to good intensity and carrying-power and quality. To sum up the whole matter of correct voice production we state: There must be absolute freedom of motion of the cartilages of the larynx that any desired pitch may be obtained without effort on the part of the producer; 2, there must be a perfectly free vibration of the vocal cords that the proper combination of partial tones may be started by them; 3. there must be the fullest possible use of our resonance space that the requisite reinforcement may be attained. Any action of the throat-muscles which prevents the free use of any one or all of these factors must be termed an interference.

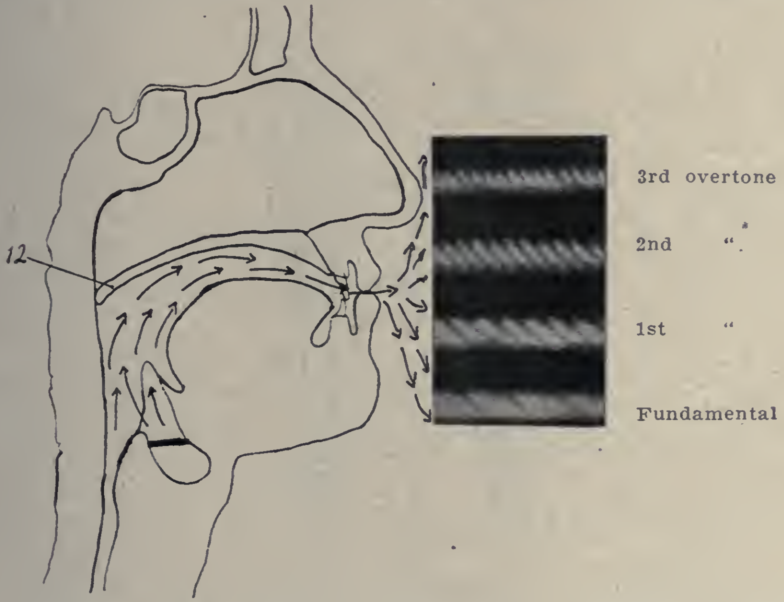


Figure 10.—Vertical section of the head similar to Figure 1, but showing how raising the soft palate, 12, and closing the passage diminish the space available for resonant re-enforcement by cutting off the large cavity of the upper pharynx and nose.

The principal muscles whose contraction does interfere with correct voice-production are those of the soft palate, the constrictor muscles of the pharynx, the muscles of the back part of the tongue, the genio-hyoid, the muscular fibers of the false vocal cords and those surrounding the ventrical of the larynx. These are termed extrinsic muscles of the larynx in contra-distinction to the intrinsic or true tone-producing muscles whose function it is to control the vibration of the vocal cords through the motion of the cartilages to which they (the cords) are attached.

We will now show how the contraction of the extrinsic muscles interferes with resonance (and hence with intensity, carrying power and quality) and also with the free motion of the laryngeal cartilages and consequently with pitch. The two most pernicious interferences are those of the soft palate and the false vocal cords. Figure 9 shows a section of the head and throat, with the soft palate in the correct position to allow full use of the resonance cavities, and an analysis of the resulting tone. In this tone there is practically no interference except that of the false vocal cords and the geniohyoid muscles. If these had not been present the waves in all the partial tones especially that of the fundamental would have been stronger and more distinct and the tone vastly improved in intensity and carrying power and quality. However, we have here a fairly good representation of what the ideal tone should be. The fundamental tone has the highest wave and the waves of the overtones gradually diminish in height as we go up in the series but all are present. This is as it should be. The strong fundamental gives that ringing quality which is so much to be desired while the higher overtones give a certain richness which can be acquired in no other way. The tone produced by a tuning fork and its resonator is a pure fundamental and some idea of the desired quality may be gained by listening to this. The presence of the eight partial tones gives the material for making the different combinations essential

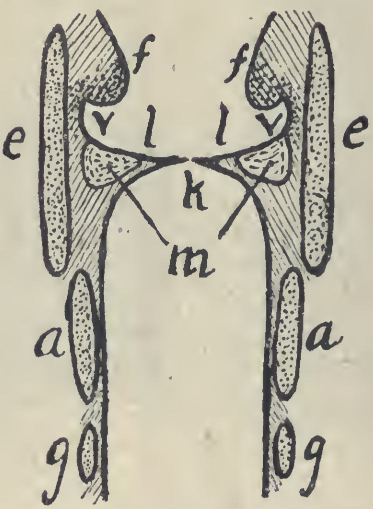


Figure 11.

for the production of the vowel sounds as well as the expression of the different emotions. The cavities of the pharynx, mouth and nose acting as one give the large space essential to the proper reinforcement of the fundamental. The small cavities of the nose furnish the small spaces (1, 2, 3, Figure 9) necessary for the reinforcement of the higher partial tones. Therefore a tone is produced which is rich, musical and resonant. Figure 10 shows the interference of the soft palate and its effect on the resulting tone. When the soft palate (12, Figure 9), contracts it is pulled upwards and backwards against the back of the throat (as shown by 12, Figure 10) shutting off the largest space of the epi-pharynx (10 Figure 9) and also the small spaces in the nose (1, 2, 3, Figure 9). The remaining resonance space is not sufficient to properly reinforce the fundamental tone and its wave is very small. The four upper partial tones are not present at all due to the shutting off of the small cavities of the nose. This combination of partial tones gives a harsh, disagreeable and unmusical tone. In Figure 10 we have only four partial tones with the fundamental weak and the partial tones increasing in strength as they rise in the series. The contrast in quality between these two tones is very marked and the interference of the soft palate can be readily detected by the trained ear.

The interference of the false cords may be understood by a reference to Figure 11. *LL* are placed just above the true cords. *K* just below the glottis. *M* indicates the position of the vocal muscle. *V* is the ventrical of the larynx and *ff* show the false vocal cords. The function of the ventrical of the larynx is to afford a free space for the true cords to vibrate in and they also contain numerous mucus glands which furnish mucus to keep the vocal cords moist. The false vocal cords have no function in tone production. During the acts of swallowing and lifting they approximate and keep the food from dropping into the larynx when we swallow and the air escaping from the lungs when we lift. The ventrical of the larynx is practically surrounded by muscle-fibers as shown by the black dots in the figure. When these, together with the false cords contract they pull the walls of the ventrical inwards upon the true cords and thus interfere with their free vibration. This cuts down the height of the air waves as they are being started by the cords and we do not get the proper combination set up. The interference of the false cords gives a certain roughness or harshness to the tone which is unmistakable once it is recognized. Any contraction of the constrictor muscles of the pharynx narrows this space. Pulling down the back of the tongue pushes the epiglottis (13, Figure 9) backwards and downwards and thus interferes with the air-waves as they pass out of the larynx. Contraction of the genio-hyoid muscle which extends from the jaw to the hyoid bone (5, Figure 9) gives a peculiar muffled quality to the tone.

All of these extrinsic interfering muscles are attached directly or indirectly to the thyroid cartilages of the larynx. Their strong contraction has the effect of pulling the thyroid cartilage (e Figure 7) upwards and forwards away from the cricoid (a Figure 7). This has the effect of fixing the little arytenoid cartilage (b Figure 7) so firmly upon the cricoid, that the vocal muscle is unable to rotate it. Without the rotation of the arytenoid cartilage we lose the lessening of the length and weight of the vibrating cord as shown in Fugures 5 and 6. These two factors should give at least a change of two octaves in pitch. Interference of the extrinsic muscles, therefore, takes away the two most important factors in pitch-changes leaving us nothing but increased tension to depend upon. This means great tension on the cord and vocal muscles for the high tones, the use of comparatively large amount of breath to swing the tense cord, fewer segmentations of the cord and a cutting down of our material for changes of quality. We will appreciate this fact better when we realize that to raise the pitch an octave by increased tension alone we must quadruple the pulling force. Every voice should have a range of three octaves and this without effort. To get this by increased tension alone means for the highest pitch sixty-four times the initial pulling force. If all three pitch factors are present this range could be produced with probably less than four times the initial pulling force. We are now in a position to understand the relationships of these classes of facts. The conditions of the throat which gives full use of one class gives full use of all. If we would make use of all three factors involved in pitch-changes and avoid straining the vocal muscles, we must relax *all* of the extrinsic muscles. If we would get good intensity and carrying power with the use of little breath and without straining the vocal muscles we must relax *all* the extrinsic muscles. If we would produce tones of good quality, that is tones composed of a strong fundamental and at least seven overtones we must relax all of the extrinsic muscles. We may sum up the whole subject of voice production in the phrase "relaxation of the extrinsic muscles." A natural law is a formula which resumes or sums up in a few words a wide range of phenomena. Here then is the natural law of tone production and the fifth and last step in the scientific method as outlined above.

The next question is why do singers and speakers interfere, or the etiology of interference. This is readily understood when we know the nature of the two sets of muscles concerned, viz: intrinsic and extrinsic. The intrinsic muscles are involuntary and not directly under the control of the will. Their action cannot be forced but must be induced. The extrinsic or interfering muscles are voluntary or directly controlled by the will. The universal tendency of the singer or speaker when they perform is *to do things* and thus bring the will into action and the resulting interference. The novice realizing that something is wrong goes to the teacher to have this corrected. The advice almost always given is to sing the tone some other way and thus confirm the interference. If this is kept up long enough the overworked vocal muscles give out and the voice so far as effective singing and speaking is concerned is ruined. What the teacher should do is to stop the pupil from doing the things which are wrong; and this brings us to the matter of diagnoisis of interference by listening to voices or voice auscultation.

In learning to diagnose diseases of the chest every medical student is required to familiarize himself first with the normal breath and heart sounds. Then his ear is gradually trained to recognize variations from these normal sounds due to the different diseased conditions. In no other way can he learn to diagnose correctly diseases of the chest. In precisely the same way must the teacher's ear be trained to recognize the changes in quality due to the different forms of interference. Except in the case of the soft palate interference there is no other way the teacher can detect it. Closing the nostrils with the thumb and finger is a simple and certain test of soft palate interference. If there is no interference most of the tone will be shut off at once. If there is soft palate interference there will be no change in volume or quality. However, a glance at Figures 9 and 10 indicates that it should be very easy to hear this interference without any nose pinching, and it is. The great disadvantage which the teacher of voice labors under in comparison with the medical student is that the normal voice-sounds are not heard. There is no standard of tone-production at present. Soft palate interference is universal even in our greatest singers and for this reason we do not yet realize what the capabilities of the vocal structures are. False cord interference makes a decided change in quality and is readily recognized by the trained ear.

Changes in quality due to the other forms of interference are not so marked but patient practice will enable any normal ear to detect these in time.

As to treatment, the only possible salvation for the singer or speaker is to learn to produce a tone without interference and then practice this tone until the whole range and volume are developed. Interference means the use of the extrinsic muscles and we cannot get rid of a bad habit by practicing it. The action of the intrinsic muscles must be made absolutely independent of the extrinsic.

As to a standard of criticism there is none at the present time. Voice analysis has shown that to produce a strong fundamental tone there must be complete relaxation of the extrinsic muscles. The more complete this is the stronger is the fundamental. The ear then should be trained to recognize the fundamental tone. A tuning fork and a properly tuned resonator produces only a fundamental tone. This will help to train the ear to recognize the strong fundamental tone in the complex sound we call the voice. Nothing, however, but voice analysis will train the ear to hear all kinds of interference and here is where we have had the advantage of all others in working out this most difficult problem. Without this we should have failed utterly not only in detecting interference, but in working out a rational method of eliminating it. The teacher should be a critic *par excellence.* The great teachers are the newspaper critics as they reach all the people. Each must learn to hear interference before he can become efficient in eliminating it. The ability to detect interference is the basis of true criticism and this must come through voice analysis.

221 West Thirty-third Street.

Sarcoma of the Tonsil. G. BERRY, *Boston Med. and Surg. Jour.*, March 7, 1912.

The author reports a case which is of interest because of the extreme age of the patient, 86 years. The acute throat symptoms demanded the removal of the tonsil tumor with resulting relief to the patient. The writer then reviews the literature dealing with sarcomata of this region, with particular reference to the surgical treatment of such conditions. BERRY (MOSHER.)

STANDARDIZATION OF VOCAL TRAINING FROM THE TEACHER'S STANDPOINT.*

MR. AND MRS. H. HOWARD BROWN, NEW YORK CITY.

Our work as teachers for the past twelve years has been with a view to assist in the important step of standardizing vocal training when the time should come. We believe that "standardization" will be brought about just as soon as the teachers, critics and laryngologists make up their minds that the many formulas which now exist must be superseded by a system of tone-production, based upon the scientific principle of cause and effect.

Why do we need a standard, why not go on as we have been doing? When the musical press constantly refers to the subject, and the National Association was founded for the very purpose of creating a standard, and doctors consider it of sufficient importance to make it a special feature of an annual meeting of the Triological Association, there must be a vital reason for all this talk about a universal system. Is the artistic conscience becoming super-sensitive so that it feels an unusual responsibility as a public servant? Is the public dissatisfied with its annual investment in singing lessons?

The study of singing constantly is increasing because the people are cultivating their esthetic tastes as a diversion from commercialism which has reached its heighth. Millions are spent every year for music and the people want a return for their money which they are not always sure of getting, owing to the lack of unity among teachers as to the correct method of voice-training.

Do not misunderstand us—individual teachers always have done fine work and both the empiricist and psychologist have got results, —and there has been some good scientific work. The latter branch, however, has been abused by pseudo-scientists who attempt to teach physiology without even understanding the principles of the subject.

The teacher of to-day is asking for social and professional position in the community. As Mr. Oscar Saenger, one of our most successful American teachers, said in a recent interview on the subject: "The vocal teacher is a tremendous educational factor in this country, not so much because of his work upon professionals, but on account of the large army of amateurs in whom he is developing the finer instincts."

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*Read by invitation at the annual meeting of the American Laryngological, Rhinological and Otological Society, May 13, 1912.

Think of it, friends—having to plead for recognition of the profession which you have adopted for your life work. The teacher cannot, as a class, be placed upon a par with doctor, lawyer and academician until he secures public confidence by wiping out whatever abuses may have crept into his profession.

Just 300 years ago, the birth of opera created a demand for artistic singing, and in 100 years this demand was met by the creation of a standard which never has been improved upon, and the Melbas, Sembrichs and Carusos of our day are lineal descendants of Faustina, Farinell and their confreres.

This standard of production could not have existed without a corresponding grade of teaching, and vocal art had a secure foundation in the conscientious efforts of such great masters as Tosi Porpora and others. It would be easy to follow them if we were certain as to their methods, but in those days only the elect studied the art of singing, and a seventeenth or eighteenth century system is not equal to the strenuous demands of to-day, when everyone tries to learn. There was no laryngoscope then, and vocal physiology was not understood, but still empirical suggestion produced wonderful results.

Tosi tells us that in singing one must be free from facial contortions and that brings us to the point; he heard that such things made bad tones, but how did he remove them? It is for the teachers of today to experiment until they find out, and by the process of elimination and the study of vocal action to determine the principles of tone-production which underlie all esthetic efforts. In order to do this, a standard must be established and enforced. For the sake of argument, we are going to define a correct or "standard tone," as one in which there is full development and perfect harmony of its anatomical, physiological, psychological and pedagogical constituents.

Who have this tone? Melba, Caruso and a few of that kind. Standardization is not for them, but for the benefit of those who, through limitations, fall below that level. What shall we standardize? The anatomical cannot be changed, and the rules of interpretation are so well known that if one has the voice and can master the difficult problem of tone-production, he can find many instructors who can make a singer of him. If, however, the voice contains radical defects it is by no means certain that he will have them removed.

It is the pedagogical and physical which need standardizing and the former may have a complete vocal science at its command so soon as the physical and psychological are placed in correct relation to each other.

The esthetic nature of the singer must cease to shrink from whatever of the mechanical is necessary before this can be accomplished.

All piano and violin teachers, nowadays, have methods for ridding pupils of stiff wrist muscles, but very few vocal teachers recognize and cure tongue stiffness as detrimental to good tone-production, although there are three unnatural uses of the tongue which affect tone-quality: The tongue grooved, or held too low in the mouth, creates a hollow, pinched and throaty sound. Thickened tongue, drawn back from the teeth, causes a thick and throaty sound. Tip of tongue tilted upward muffles the tone. Chin muscles, hardened, cause a hard, stiff tone. Stiffened jaw makes a tight, rigid sound. Stretched palate muscles make a hollow sound in the upper part of the tone. Relaxed palate muscles—a flabby tone. Weakening the down-holding larynx muscles and allowing it to fly upwards on high tones, produces shrillness and an uneven range. Larynx forced downwards causes a guttural, wooden tone. Sometimes over-contracting chin muscles pull the hyoid bone and thyroid cartilage apart, causing chronic hoarseness.

Any of the above conditions, when pronounced, tend towards vocal decadence, and if aggravated, they may lead to singing out of tune, nodules, hoarseness, or paralysis of the cords, should the respiratory tract become inflamed from any cause. They should be removed in incipiency by applying relaxation at the over-contracted points.

The singer's imagination and imitative faculty sometimes enables him to receive help from suggestions which are aimed solely at the effect, but principle says, "Treat the cause or your results will not be uniform."

It is not to be asserted that there have not been great singers whose voices contained some of the above defects, but it is certain that if their vocal action had been free, they would have achieved far greater results.

Bad breathing is at the root of most derangements and it must be remembered that the effortless breathing of daily use will not produce sufficient pressure for an artistic tone. The best method of breathing for singing and public speaking is a combination of costal and diaphragmatic. We reject the clavicular because it is a superfluous effort and creates stiffness. The ribs should be fully and flexibly expanded with the abdominal muscles relaxed during inhalation.

The latter and the lower back muscles are expiratory agents; therefore the method so much in vogue of pressing outward at the base of the breast-bone of inhalation, also, must be discarded, as this outward pressure starts a contraction of the abdominal muscles which interferes with rib expansion.

The approximation of the vocal cords is too well known to require description, but there is one striking fact about their action which must be borne in mind. They are assisted in phonation by certain sets of muscles, fastened outside the larynx. Any derangement of these extrinsic muscles acts directly upon the vocal cords, causing them to overwork and upsetting nature. The intrinsic muscles are incapable of any voluntary adjustment excepting approximation and separation, but all of the extrinsic muscles can be controlled, and it is through them that parts which are out of balance must be corrected. Cumbersome exercises must be avoided and the sense of artistic singing not only preserved but augmented by any gain in freedom of vocal action resulting from the correction of physical faults. Ordinary methods of vocalization may be used.

Have you heard the singer whose middle tones are good but who has a chronic tendency to a thin, screaming tone above "F," coupled with an inclination to sharp? He is violating the laws of fixation. An even scale demands that the larynx shall be fixed, not stiffly, but so that it does not fly up and down with ascending and descending scales. This fixation is the pivot upon which cord-stretching takes place. You all understand the lengthening and shortening of the cords for changing pitches. This is accomplished not alone by the approximating apparatus, but by an extrinsic mechanism which swings the thyroid cartilage forward: Larynx to palate, larynx to breast-bone, and thyroid to cricoid muscles.

From this brief sketch you can see that whether derangements are in the vocal action itself or in the interfering muscles outside of it, they act directly upon the cords and prevent artistic production.

Laryngologists find many cases that puzzle them in treating singers or speakers. They become aware of various kinds of vocal decadence without sufficient pathological conditions to warrant them; many of which seem to disappear under treatment and with rest, only to return in worse form with further voice use. These are just manifestations of conditions which we have described, and there is no question but that physicians would call upon voice specialists to stop them more often than they do if there were a reliable standard method.

The artistic gain from a standard system would be greater technic. The doctor who lacks this essential fails; the instrumentalist whose technic is faulty from bad tone-production is rejected. But what happens to the singer who fails to achieve fluency? He goes into opera, sings the loudest and highest tone possible, and receives the adoration of the public—or he joins the ranks of modern declaimers who believe that good singing consists solely in psychological expression. The ideal singer should have the whole combination of tone, technic and interpretation.

The physical is expression's tool, and with imperfect tools the greatest results never can be attained. Every method now in vogue has its peculiarities, but the new system would blend the good points of each and eliminate its bad ones. Nasality, thickness and registers, all could be equalized. The method consisting entirely of covered tones, the one which substitutes falsetto for mezza di voce, the use of tremolo, could be artistically adjusted by abandoning the formula.

It is true that resonance is felt more in the chest on low tones, in the pharynx and mouth on middle and in the nasal cavity on high ones, but the voice can be blended into an even range if the correct action, described herein is used on every note of the scale and the breath pressure and muscular tension allowed to change but infinitesimally on each ascending or descending pitch.

By the same means one may achieve mezza do voce, which is the whole voice used with less power than for loud tones. When a sudden change is made in going from loud to soft, instead of a very gradual one, falsetto results instead of mezza di voce.

Falsetto consists largely of the initial, or larynx tone and is therefore a distant relative of the real tone.

The whiteness of the open tone, with its "smile that won't come off": the eternally pathetic sound of a covered tone; the lugubrious and heavy sound of manufactured contralto, caused by lowering the back of the tongue and stiffening the chin muscles, all can be normally adjusted by means of a standard system. Tremolo, one of the most serious faults, is the result either of weakness or forcing in the breathing apparatus, or in the mechanism itself. Its cure is to teach control at the affected point.

We make no distinction between the male and female voice in our methods of handling pupils, so far as tone-production is concerned, but in the female voice the difficulty of making an even scale is more pronounced between the middle and lower registers, while in men it more often occurs between middle and higher.

As the principles of a standard system are alike applicable to the speaking-voice, a great and useful field of work might be opened in this department.

The principle of correcting false positions of the larynx and enunciating organs already is in use in speech-defect clinics, such as Dr. Makuen's, but a more general use of the standard system could be made, if vocal training by its principles were made part of all school teachers' normal curriculum.

If school children could be made to produce pleasing tones in a natural manner, to enunciate distinctly and pronounce correctly, perhaps some of the opprobrium now cast upon the strident "American voice" might be removed. As a matter of fact, our voices are as good as any others, and English is beautiful when properly delivered, but an admixture of races, together with American strenuosity, have made us careless in the matter of speech.

This conditions will be modified as people turn their attention to esthetics, and with a reliable system no doubt many business men would take voice-training just for the sake of speaking well. One might develop a good speaking-voice in a few months, whereas it takes several years to learn to sing well.

We have had these cases of corrective work: a lawyer who from sickness when a child, had thickened arytenoids and a spread thyroid cartilage, with a consequent falsetto voice; a business man who had relaxed vocal cords and blurred enunciation, from using a heavy whisper in dictating letters; a broker with chronic hoarseness from shouting on the stock exchange; an eminent priest, with vocal paralysis, from forcing his voice by over-contraction of chin muscles. These people all made complete or partial recoveries, but with proper training in early life their troubles might have been averted.

A girl of 8, who refused to articulate, and who could not be understood, was made to speak distinctly in nine lessons; a young man of 24, speaking soprano from a larynx held too high, after one lesson, spoke in a good baritone. His sister, who from a relaxed palate, talked like one with a cleft palate, was cured in four lessons.

I have a class of small children for sight reading, all of whom were monotones, with the dead quality attendant upon lack of musical perception. In three months all but one could sing tunes, and constant suggestion has given them at least an acceptable tone-quality. A standard-system, therefore, would be of as great benefit to speech as to song.

This is not a plea for the strictly physiological method, for singing cannot exist without the esthetic, and emotional expression is the thing most to be desired, but the point is that every teacher should understand the laws of vocal action, and by combining these with the esthetic, have a good psycho-mechanical system, by which individual requirements could be met. We should work upon principle, but each one may use his own application of exercises.

We have come here to offer some suggestions which we hope will concentrate thought and action into a practical move. Something must be done to meet the demand for a standard, and the wisest plan is to begin with concerted action which, in time, will develop into a consensus of opinion.

The word of the individual can be accepted only as it helps to balance the scales, for human nature is such that, if we had Porpora in our midst, he would have some disciples, but many dissenters.

The committee must not be large enough to be unwieldy,—if possible, a few teachers, doctors, critics, willing to give the necessary time to the work.

The keynote must be experimentation with voices. Two lines must be followed—normal voice-development and the classification and removal of all tonal peculiarities caused by interferences. Issue a call for singers who never have taken lessons to come before a committee for the good of the cause. By this, a few simple rules could be made and their underlying principles shown, the use of which would be of inestimable benefit.

The committee should report the proof of its results to the National and State Associations, and this would lead to the establishment of national and state normal schools, where teachers could study all branches of the art. Legislation would then be possible, for there would be something definite upon which to legislate. The period of study and quality of knowledge required could be fixed by law.

We are optimistic enough to believe that teachers would embrace the opportunity of acquiring a definite knowledge if it were properly presented. If they did not, they would risk failure from the loss of public support.

The benefits to teachers would be two-fold: first, the recognition due them; second, financial gain from increase of business by having secured public confidence.

Gentlemen, by going to your homes and agitating this important matter, you can be of great assistance in bringing it about, and we firmly believe that this meeting will prove to be a valuable contribution to better conditions, which are sure to result from the standardization of "Methods in Vocal Training."

We present for your consideration a clinical demonstration of four cases with a diagnosis of conditions, and a suggestion for remedy of defects.

Case 4: Soprano. Imperfect connection between breath and tone, causing poor attack. Breath-pressure not strong owing to chest falling too rapidly. Stiffness of neck, chest and tongue-muscles, causing a thickness of tone.

By removing stiffness of chest-muscles during inhalation, and not allowing upper chest to full too rapidly during the singing of tone, the singer was enabled to create a breath-pressure which allowed a relaxation of the stiffened neck and tongue-muscles, giving free emission of tone and making the quality clearer and lighter. The pathological history of this case showed that she had recurrent double nodules on the vocal cords, which had been removed by Dr. Frank E. Miller, allowing the voice to be used again.

Case 8: Contralto. Breath support and attack poor. Back tongue too low—lips, jaw and chin muscles stiff. Registers of different quality and not blended, vocalization on "oh" with covered tone. Enunciation impaired from lip; jaw and tongue stiffness. Relaxing this stiffness vocalizing on "ah" with better breath-pressure caused a better quality, tone becoming softer. Registers were somewhat evened by using same character of effort at different parts of the voice.

Case 15: Baritone. Great bodily stiffness and poor breath pressure, vocalization on "oh" and covered tone with forcing and roughness. Readjustment of body and relaxation of tongue and lips with vocalization on "ah" gave a better quality and smoother tone.

Case 14: Baritone. Man of 34, who had sung soprano in public until 29 years of age, when voice suddenly changed to baritone. Range limited, breath pressure poor, tongue grooved, causing pinched tone. Facial muscles over-contracted. Relaxing tongue and facial muscles and giving more breath-pressure gave a much better quality of tone and removed a roughness which had been present. Vocalization all done on "ah."

810 Carnegie Hall.

VOCAL ART SCIENCE FROM THE STANDPOINT OF USE AND ABUSE OF THE VOICE.*

DR. FRANK E. MILLER, NEW YORK CITY.

Vocal Art Science, from the standpoint of use and abuse of the voice, is the subject presented to you to-day for your consideration and discussion. Definite and worthy results can be obtained only by sincere concentration of thought, combined with effort, and I will ask you to give your undivided attention to the first and foremost necessity resulting in our present urgent demand for a possible *American Standardization* of *Tone Production* in *Vocal Art Science,* and its subsequent issues.

I believe that in general laryngo-pharyngeal observations are so replete with inaccuracies and individualisms, so far as voice productions are concerned, that conclusions of general value cannot be determined. It seems necessary that individual cases should be set aside, to give room for thousands of observations on different schools and individuals in order to furnish solid facts on which all may stand and depend, and we believe it absolutely true and necessary that the physicians, physicists, singing teachers and performers, each one in his own sphere, and all collectively work in harmony for a common end and goal.

In 1891 I stated the necessity for a standard of tone, and had the idea of constructing a voice measure, a tester, a phonometer or vocometer, if you please. It was to consist of a combination of a phonograph, photograph, and a mechanical reproduction of the registration of the vocal sounds, the combination so arranged as to form a standard for vocal tones, to measure and compare for all time every voice in the world. After much deliberation and thorough discussion of the subject, one conclusion was irresistible, that for the present the only practical vocometer is the tried and experienced maestro, who, by his delicate and finely trained organ of hearing, power of judging expression, and aided by experience and ability to impart his knowledge, is able to conduct the pupil to use properly that divine gift, the voice, in a perfect manner, so that tone springs from the throat with a spontaneity, and coquettes with a reserve that makes us long for more.

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*Read at the meeting of the American Laryngological, Rhinological and Otological Society, Philadelphia, May 13, 1912.

In a long career of practical specialized work, I have had the good fortune to closely observe some of the foremost singers of the day, and I have gathered a store of information as to what does, as well as what does not constitute good singing. I feel that I should give the results of these observations to the many earnest vocal students who are striving towards the light, in the hope of rendering practical service. There is no intention upon my part of serving up, as in compressed tablet form, a complete musical education within the limited time allotted me.

Vocal Art Science stands for the consummately true and beautiful in singing. The singer must weld the art and science into indissoluble union. He who does this practices the most exquisite and ennobling of arts, giving messages of inestimable uplift directly to the human soul: he is the true exponent of *vocal art science.*

In regard to the loss of voice in singers, Mr. W. J. Henderson has stated that two things—ignorance of any method of singing, and acquaintance with a radically incorrect method—are the most prolific causes of voice-failure among singers.

The important question for throat specialists, physicists, teachers and singers is :"How is tone produced by human vocal organs?" Up to the present time it has remained unanswered. I attribute this to the fact that the above-named professionals seldom work together. Each one makes researches in his own line, without regard to important factors found by the others.

In order to understand our subject we must have a correct *voice analysis.* Artistic singing involves complete physiological control of the voice-producing functions, combined with entire command of the metaphysical resources of art. In order to understand what is meant by "physiological control of the voice-producing functions," it is necessary for us to have a correct understanding of the *voice-producing mechanism,* and the *method of control.*

This essay is not intended to bring forth any new theories, but to state a few facts as they appear under careful observation, and to leave them with you. The most earnest work of the singer, the teacher, the physician and the physicist is necessary to bring some clearness out of a multitude of divergent opinions prevalent to-day on voice and voice-production.

It is proposed to mark the singer on the basis of 100 counts, and to give such points as range, and resonance, breath control, etc., their due value in the sum of the whole. Before presenting the scheme of marking, it will not be amiss to explain clearly what is understood by range, timber, volume, and other terms which slip so glibly from the tongues of persons who have no clear idea of what they imply. Recently the author of a popular book made the statement that singing "off pitch" was the only fault existing in singers. When confronted with questions of a lack of resonance, breath control, tongue, position, and the like, he said that "pitch" included all these. What ailed this man was that he did not know the meaning of the term "pitch."

Style includes diction and expression—by it we approximate the singer's grasp of the aria or song and his ability to convey his conception to his audience. Good style implies a nice discrimination between text-production and voice-production. It means the proper idea of the relative value of vowels and consonants. It is through good style that we come closest to the mentality of the singer.

Resonance is the reinforcement of song by means of hollow spaces, which gives quality to vocal sounds by their reverberation. In singing we distinguish between nasal and palatal resonance. These should be balanced, and when we say the resonance is not well distributed we mean that one or the other is lacking or deficient in quantity. In speaking of nasal resonance, it is understood, as in all illustrations in this article, that there are other resonances, these two used as examples to illustrate the idea.

Range is the scope, extent or compass of the voice. Some voices are short, while others have a greater scope than is usual. Volume is the space that voice fills, or the encompassing power of the voice. By flexibility we mean elasticity, or pliancy. The flexible voice can execute rapid and difficult phrases with ease, while the stiff voice finds only the slower and heavier passages possible to it. The flexible voice swells and diminishes with ease, and gives the subtle accent and diminuendo to good style. Agility comprises the power to execute trills, flourishes and florid work generally. We understand by breath-control, breath so managed as to insure good phrasing and steady support to the tone. The abominable wavering and wobbling of tone which so often offends the ear is nearly always caused by defective breath-control.

When we make a special note of the tongue we are considering its position—for the tongue, of which the Holy Writ speaks as "an unruly member," must not be obstreperous; it may prove to be a serious obstacle to the attachment of the open throat and smoothly flowing tone.

The Germans call timber "tone color." Timber is individuality of the voice. No two of us have identical timber. We may speak of a voice of white timber, or quality, showing lack of nasal resonance—dark timber, the result of a sort of faked weight and the besetting sin of contraltos; sympathetic, rich timber, etc.

To explain the chart (of which the following is submitted as a sample) each of the points—personality, experience, style, timber, volume, resonance,—ten counts each; range, tongue, flexibility, and agility,—five counts each; breath control and pitch,—ten counts each. "Voice" means kind of voice. We divide singers into three classes—first class, 90 counts or over,—second class, between 75 and 80,—third class, below 75 counts.

SAMPLE OF CHART FOR MARKING SINGERS.

Name: Miss................................; Residence: New York.
Nativity: American. Weight: 178 lbs.
Personality: Stout, mature, self-possessed (5). Height: 5 ft. 8 in.
Style: Good (10). Type: Florid.
Professional Experience: Has sung in 6 operas; coached in 9. (10)
Complexion: Fair.
Professional Singers in Family: Class: 2—76 counts.
Voice: Soprano. Range: A (flat) to 6^2 (10). Timber: White (5).
Volume: Fair (5). Resonance: Sings way back on vocal cords (5); no nasal; marked fundamental.
Tongue: Humped (5). Breath Control: Good, big diaphragmatic development (10).
Flexibility: Ordinary (3). Agility: Lacking facility (3). Pitch: Sang habitually sharp—(5).
Remarks: Has influential friends who have sent her abroad. $14,000 spent for instruction in four years. Trained with Herr F. E. and G. Q. Says she has good voice but her training has done more harm than good. Herr P. highly recommends her. G. says she will have a brilliant career. (Made upon person who marked, an unfavorable impression—quality over-rated).

Causes Influencing the Resonating Spaces: It will be impossible for me to go into the matter of interference in the hollow spaces from the turbinates, tonsils, etc., to a satisfactory extent; this matter has been taken up in detail in my lecture, which will in short time be presented to you for your consideration in my new book, *"Vocal Art Science."*

I will here merely suggest for your consideration that the causes influencing the resonance spaces are the three valves of our instruments, viz., the palate, tongue and epiglottis. The action of these determine the entire voice question, because they not only govern our resonating spaces, but control in a very elastic way, the action of our whole instrument. Most all medical questions center about these:

When the palate is removed, so as to make a perfect arch, as has been done in former years, without consideration of its effect upon the voice, we have the well known symptom of egophony, or bleating, and ability to form overtone is markedly diminished; yet even with this an artist has been known to go through his whole career, but not without extreme mental suffering through his vocal exertions. I do not mean to even suggest how this body shall decide that operation, but we should consolidate upon one opinion as to where and how it should be ablated.

As within its folds and attachments we have the tonsils, another question comes forward: Normal tonsils assist the voice, acting principally to lubricate the adjoining muscles, by separating and moistening them, and also as a safety-valve for the excessive abnormal secretions developed by the digestive tract. In this way they modify and hold the balance of resonance of the three cavities just mentioned, and they are of most phonetic value when normal, to say nothing of their value to digestion.

Diseased and enlarged tonsils interfere with all the muscles in their vicinity by infecting them, and distorting the vibrations of the voice and impairing the functions of the three cavaties mentioned above, besides destroying the valuable assistance of sunesthesia, or co-operation of all the senses.

If they can be restored to normal by any means otherwise than by removal, it might be tried, but we must bear in mind that voice is a habit, and if the habit is bad, it were better to remove the tonsil. Diseased tonsils from the atrophic side are more to be feared, because they harbor pathologic germs, which result in specific infections. Among the results of these infections we have the node, which in turn will be influenced by the special poisoning that infects the tonsil, diptheria, mixed infection, staphylococcus, and pneumococci, which cause catarrhal conditions of the pillars and the plica. In order to have a most interesting session, a number of cases were brought from New York for the opinion of the Fellows gathered from the four quarters of the United States. Some of these cases are as follows:

Case 1: A fibroma developed upon the center of the vocal cord, as a sequel to a node, i. e., a small red tumor hanging from center of left vocal cord. This took two years to develop. It can be demonstrated by a mirror, or by the singing voice, and is best observed while singing the scale of *F* at both ends of the scale. It was to be left to the judgment of the Committee of the Society as to what should be done in this case.

Case *18*: Fibroma on the right vocal cord, same as case No. 1, but the fibroma had been removed one week before the meeting of the American Laryngological, Rhinological and Otological Society, and the patient was capable of being demonstrated. Patient sang full range in one week after removal of fibroma. Query: When, in the judgment of this august body, should he be allowed to sing?

Case 2: Fibrous band tissue was developed, about the size of an apple seed, on the arytenoid end of the left vocal cord: one and a half years' duration. After several consultations it was deemed best to remove it. Upon removal in three weeks patient was able to use his voice from C^1 down to A, without any noticeable impairment. From A, below, a husky sound developed in the voice. Query: What should his exercises be, and when might he hope for a full return of his voice? (Most people understand this trouble as "false cord interference," as is produced by pronouncing the word "luck" very forcibly, and lingering on the letter "k," used by many teachers to illustrate attack and breath control.)

Case 3: Left frontal sinus and left antrum trouble, with hypertrophied turbinated bones. Removal of the turbinated bones—in three months resulting in marked diminution of all discharges. Three days after removal the whole left side, face and vocal cords became partially paralyzed. Vocal cords, true and false, became thoroughly relaxed. In three months time they were restored to normal. Query: What caused the partially paralyzed condition of the vocal apparatus in the larynx? The close association of turbinated bones with the nerve supply, or Meckel's ganglion, would account for the facial condition. This has occurred several times in my practice, and would seem to indicate that the akinesis, or relaxation of the vocal cords on the left side of the larynx started in the temporary injury to Meckel's ganglion above, although the nerve supply of the larynx is quite remote.

Query 2: What influence does the removal of the turbinated bones on one side have? If Muckey and Hallock's theory be true, that the closing of the post-nasal space by the soft palate, causes a disappearance of the four upper overtones of the voice, are not these three turbinated bones the resonators which respond as partial overtones to the fundamental of the vocal cords,—B^3 flat, G^3 and E^3—the superior turbinated bone representing B^3 flat, middle turbinated bone representing G^3, and the inferior turbinated bone representing E^3? However, having left three whole turbinated bones as resonators on the right side, and having perfect space to breathe through on the left side, with undisturbed septum, in this case, has given the patient perfect voice. The voice improved markedly in its overtones, and opened, as the patient said, "a new resonance cavity," giving him an entirely new placement for tone.

Query: When, how, and where should the turbinated tissues be removed in singers?

Case 4: In February, 1907, removed double C-sharp node with forceps. Sang in three weeks. December, 1909, removed one node from left cord—a double C-sharp node, that is, nodes at anterior third of cord. Recovered in three months. December, 1910, removed three nodes, two C-sharp and one F-sharp, or nodes occuring midway between the anterior third and the thyroid end of the cord. The F-sharp node was found on the left vocal cord, leaving the cords in a ragged and apparently torn state. After removal in 1910 the return of the voice was exceedingly slow, and at the end of six months two enlarged and atrophied faucial tonsils, and also a lingual tonsil, were removed, the removal of which (though not very large) was deemed best, when it was recalled that our beloved and esteemed Dr. Knight wrote an article on this subject, suggesting this procedure. Patient did not speak for six months and did not sing for nine months. Has now been singing for two years in a perfectly reliable manner, probably due to the fact that after the nodes were taken out both faucial and lingual tonsils were removed. However, I leave that for the Society to decide. Much interest was centered about this case, because of the Curtis method of reducing nodes by singing arpeggios, scales and notes, focussing in the mask, and pronouncing "*maw-maw-maw*" with chin resting on the sternum; or the Howard Brown method, which is singing the thirds, arpeggios, on the syllables, "*ha-ha-hay-he*" with *ha-ha* on the same note, *hay* made nasal on the third above, and *he* returning to the same note as *ha* below. This produces an elevation of the edges of the cord with a new form of alignment, which in turn is due to the change of the arytenoid in its position in the facet of the cricoid-cartilage, which does away with the falsetto notes used in the Curtis production, since segmentation only occurs above C, the production of which gives the first division of cord for the formation of overtone, no division being perceived in the first octave of the C upward; the Curtis method being sung in falsetto tone above this C, and being focussed in the mask, with notes carried upward in pitch, it would seem not to be practical for the removal of nodes which have an affinity for the anterior third of the cord, as seen in all cases of the C-sharp node, or the common node of singers.

Nodes follow the laws of segmentation. If falsetto is sung it involves only the portion of the cord in vibration above the first octave; manifestly as the swing of the other notes goes below the cord, there is now vibration in them. Again, in singing the falsetto tone on maw-maw-maw, the pitch is taken in the vicinity of E and F and cannot be carried down farther than C without breaking of the voice, as a rule, but with practice it can be done. Now as we can generally sing from C to the C above without any difficulty, it is not necessary to sing falsetto at all, unless we get into a bad habit, which the word "falsetto" indicates. True, we know that if one looks through the anterior nares of a person who has a very large and long patent choana he will observe that for every change of pitch there is a very limpid and accurate adjustment of the soft palate. It will be seen to fly up and hold its position for a moment, with every suggestion of the pitch-producing apparatus, in a manner bordering on the marvelous. It resembles a column of water thrown to a certain height, alternately rising and receding in perfect rhythm. Hence we know that the palate is arranging the post-nasal cavity for the production of an overtone and pitch, and the necessary resonance of tone-production, for then there is a reflection from the post-nasal cavity and that is reflected upon the vocal cords at the point of segmentation. Will not any singing, correct or incorrect, cause nodal formation? Or does the production of a false tone cause inharmonic conditions which rearrange the nodal formation on the cord in a different manner, so that an attempt might be made to change the position of these nodes and in this way help eradicate our difficulty. The scheme of the Browns, of the "ha-ha-hay-he" through the nose, involves both the use of the fundamental note of the cord and the segmentation system above the point where the fundamental begins to be reinforced by the superstructual tone—because with the aspirant "ha-ha" they bring the cords slowly together for the sake of massage, and with the "hay" through the nose they get the massage and reflex activity of the space which is used for overtone formation, also a positive and different alignment by the action of the palato-pharyngeus in cord-stretching.

Or shall we employ another method by applying an astringent, such as adrenalin, cocain, zinc, tannin and argyrol, thus absorbing the small infiltration into these tissues?—all of which have been known to apparently absorb fresh nodal appearances on the cord. All of these methods have been observed by many men, and have been successful to a certain extent, but one thing is very positive, when acute inflammations exist, combined with infections, colds and the like, the voice can not be used without great danger to the vocal cords. When a node begins to be organized, as indicated by its size and redness, it practically becomes necessary that the patient must have absolute rest. A fibroma is decidedly different tissue from fibrinous development in node formation; so is papilloma. Our energetic Secretary, Dr. Harris, in writing to me on the question of etiology of node formation, said he did not believe that I could prove successfully before a jury of our Fellow Laryngologists that cheesy degeneration of the tonsil caused nodes. I have never been able to prove, by reading my articles, that I made such a statement, nor wish to have such an idea hold sway, although I have never seen a node form without at some time in its formation cheesy deposits were expressed from the tonsil.

The patient had no other sensation than that of a weakness of the left side of the throat in the vicinity of the vocal cords, with a tendency to clear (as it were) and a sensation of mucus in the throat, "but no mucus would come." Examination revealed (as illustrated in one of the oil paintings brought with me) white cheesy deposit in the atrophied tonsil, several thickened papules lying on the surface of the mucous membrane of the anterior pillar, or palato-glossus; some of the circumvallate papillae are thickened and red; several papules appear upon the mucous membrane over the palato-pharyngeal fold, and several (generally one) upon the mucous membrane over the ary-epiglottic fold, or ligament. In this condition when the secretions cease, and these papules become irritated through lack of moisture, a sudden tickling sensation ensues,—the palato-pharyngeus contracts in an irregular manner, acting upon that part of the palato-pharyngeus which regulates the part of the palate which is concerned in the formation of the superstructural or partial overtones. A sudden spasm ensues, and relaxation occurs in the whole of that side of the voice apparatus, the larynx presenting an akinesis, or sub-luxation of all the parts, entering into the formation of the glottis, especially on the side affected. In experimentation several years ago, by tying off the middle fasciculus of the thyroid-arytenoid-externis, it was seen to cause the middle third of the cord to bulge. This occurs not at once, but after several spasmodic efforts, especially with the clearing of the voice. At first it resembles an outward curved condition of both true and false cords, and in a short time it is seen that this part bulged, also that all the intrinsic muscles are in a state of akinesis. When the action of phonation ensues, the cord of the opposite side will be observed to exhibit the following characteristics:

As if to protect its injured fellow, the arytenoid will be drawn in front of the injured one, and the cord at its arytenoid end seems almost to cross over and above that of the injured cord. Strange to say, the node more often appears on the well side than upon the weakened side; thus the cause of the fibrinous deposit toward the arytenoid end could possibly have been accounted for in this way, and in one of the illustrations from the twelve records which I have had prepared will be heard this peculiarity—in a few seconds of a Victor record which I have copied for this occasion, as well as a few seconds of another record wherein the patient had been singing for two years with a papilloma the size of a pea existing between his true and false cords. This artist has not lost a single performance, and when I saw him on March 24, 1912, for the last time, every vestige of this papilloma had been absorbed, without taking one drop of medicine, the artist himself preferring to go on in his anxious condition with much more care than in former years, satisfied with the constant encouragement of an ever decreasing tumor. Such are vagaries of vocal troubles! His own expression was: "I formerly abused my voice, but now I use it with care." I believe that with this principle in vogue, there will come a time when the examining laryngologist will say that "he never had a tumor!"

While we are on this question, I will ask you to look at some of the effects of the voice upon modern instrumentation: Yonder is a piano, and the first thing that commands your attention is a "V" which resemble a pair of inverted vocal cords. This indicates that this piano is constructed with its break between E and F, or at the crucial points of the singing voice. F is the note of cosmos, of all the great natural things,—the humming of bees,—the roar of the mighty Niagara. Why? Because God attuned these great natural things to respond to the vibration of this note. And now be have discovered that C is the note of man. Why? Because the voice of man responds to that note in such a manner as it responds to no other vibration. Upon what foundation do I base this assertion? Through the poverty of instrumentation, having no mechanical resonators at hand, and endeavored to solve the problem of a standard pitch for the production of tone by the human voice, my assistant, Dr. Perrault, while playfully twirling a tuning fork, placed it in front of his mouth. I seized the instrument and repeated the effort, with the discovery that the human mouth will give the same result as the brass resonator, but in a more beautiful form, and in experimentation with over a hundred different patients the conclusion was forced upon me that the human voice will respond to the natural key of C as it will to no other note. In a male voice C-512 gives the desired result, and in the female C-1024. Different forks were found to respond more readily to different voices, but "C" responds to all.

Then, why not take the key of C as our standard pitch for tone-production? For the sake of harmony and unison in orchestration, the key of A was selected as the desired universal pitch by which to tune their many and widely differing instruments. Just as necessity demands a standardization for the mechanical production of tone, a correct attainment of voice production can be achieved by just such a standardization. This fact merely establishes a law which, though ignorant of the basic principle, has been adopted by the musical world even from the early ages.

The natural scale of C, without sharps or flats—the most difficult of all—should be our standard, for in it lies every difficulty for vocal art science to overcome. In this scale lies the two breaks the same as in the human voice. In playing the scale of C on the piano, after playing the first three notes, you place your thumb ready to apply to the fourth, and in ascending the scale from the fourth note, you again prepare to apply your thumb to the eighth note, thus giving you two breaks in the registration of the notes by the hand. In the majority of voices, male or female, high or low, you will find that there is a necessity to make a great change in voice production at these points, yet this must be done in the same position so as not to change the quality. It marks distinctively the closing of the soft palate against the post-pharyngeal wall. We notice at this point that the posterior fasciculus of the palato-pharyngeus glides up under the palate and becomes associated with the tensor palati and the levator palati, one of which stretches the palate and the other raises the curtain in such a manner that the air can positively pass under the soft palate, and on either side of the soft palate, which, with the levator palati, has bunched up against the posterior wall, so that an air space exists on either side of the raphe which regulates nasal resonance, or produces nasality, as required, and the tensor palati arranges this space in a most accurate manner for the overtones which are formed above this point,—namely: octave, fifth, octave, third, fifth, seventh, octave. This leaves four overtones to be governed by the rearrangement of the post-pharyngeal space by the palato pharyngeus, the tensor palati and the levator palati.

In May, 1912, we tested the voice of Miss Lillian Kiel, soprano, and found a most peculiar condition present. Although the young lady possessed a cleft palate of large proportion, she was able to sing a tone of very good quality in the middle range. The higher notes were present, but there was a tendency at F for falsetto to intervene in place of the natural tone. It was found that the tongue was held too low for perfect freedom of tone-production and that there was some stiffening of the chin muscles. Breath pressure was inadequate. The supposition in a case of this kind would be that the voice must contain nasality, but this was not the case, due to a natural musical sense causing the throat to form a combination which simulated the artistic tone. It was noticed upon looking into the throat that there was a contraction of the palato-pharyngeus muscles which play such an important part in adjusting the buccal cavity to the requirements of good tone. This evidently prevented the nasal sound, peculiar to cleft palate, in the middle tones, but was not strong enough to prevent falsetto on the higher tones. On being told her condition she began to try to sing the same quality of tone throughout her range, and in doing so she brought the tensor palati and the levator palati into action with the pharyngeus, thus distributing the balance better and causing a freer emission of tone and a natural quality throughout the whole range. The young lady herself was able to feel the new action which was present in her tone and it could be seen with the eye. The quality of tone became smoother, more resonant, and greater in volume, and without any break at F, tones could be produced as high as D natural, either forte or piano. The best result was obtained upon the descending tonic arpeggios. There is no question but that in time vocalization of this voice will produce control. It was tried to produce the same quality in the speaking voice as in the singing voice, and when this was done there was an instantaneous gain in distinctness of enunciation and the nasal quality present in the speaking voice almost disappeared. Laryngoscopic observations showed practically no variation in cord alignment between the falsetto and the natural tone, but the action of the palatal muscles was stronger in the latter than in the former, owing to lack of obstruction from the roof of the mouth the ends of these muscles were exposed to view and the following is an eye-picture of the throat singing *ah* on soprano F^2: Approximation of vocal cords. Arytenoids pull upwards and backwards. Stylo-pharyngei pull upward, outward and backward on the horns of the thyroid cartilage, throwing the larynx backward to the spine, assisting application of tone. Pillars of the palato-pharyngei approach each other in the back of the mouth on contraction and pull upward and forward on the horns of the thyroid cartilage. Levator palati pulls straight upward. Tensor palati pull in a straight line outward toward hamular hooks to give a balance between palato and levator. Constrictors contract toward a median horizontal line across them. The stylo-pharyngeus is a muscle of fixation, but the rest of these muscles aid in cord stretching by pulling upward on the back of the thyroid cartilage and aiding the crico-thyroid muscle which pulls the thyroid cartilage forward in cord stretching. The tongue lies in such a position that unless voluntarily pulled downward the above things cannot be seen. On an ascending scale the tongue rises evenly throughout its surface to aid the hyo-glossi to pull upward on the hyoid bone and also aid the tilting of the thyroid cartilage.

The concerted action of the palate muscles and stylo-pharyngei contributes largely to artistic quality, seemingly furnishing just the right position to produce that peculiar ring in the tone which is necessary. In addition to their physiological action in cord-stretching they give the proper size and shape to that part of the cavity which they bound; thus materially adding to resonance.

Just as these muscles have a typical natural quality in tone-production, upon derangement they produce false sounds easily detected by the ear. If the levator or tensor palati become relaxed the tone will have a relaxed sound. Should the palato-pharyngei become relaxed or stretched the top of the tone will seem to have a hollow sound. There are three false qualities caused by bad tongue action: (Hollow tone—caused by grooved or lowered tongue; thick tone—caused by tip of tongue being drawn back and thickened; muffled tone—caused by tilting tongue upward). These false tongue positions usually derange palate action and they in turn upset the vocal cords, causing all kinds of trouble.

In using the tuning fork a most remarkable thing occurred in three different cases in which caries and necrosis of the bone was detected by means of the tuning fork applied to the teeth. In all of these cases it occurred in the region of the anterior ethmoid cells at the junction of the frontal and superior maxillary bones in the orbit, and acute pain was evinced at the moment the vibrating fork was applied to the teeth and the diseased parts could be absolutely detected by the area affected, and subsequently in all of these cases has been found necrosis of that part, proving that it was one of the first diagnostic signs of bone disease. The probable explanation is that the fragments of dead bone vibrated against the acutely inflamed tissue at that point.

Four weeks ago I journeyed to Boston to meet that remarkable man, Dr. Edgar Holmes, who has done so much with the nasal endoscope, to observe these facts which I had previously observed with his instrument, but not as clearly as I have been able to see and demonstrate the wonderful limpid and rhythmic movements of the palato-pharyngeus through a patent nose, without the endoscope, while singing the vowel E, movements which definitely change with every change of pitch. I have not yet been able to see what was the action of the vocal cords through the nose. I had used Hay's endoscope with remarkable success in looking above, but not being able to tell much by mouth examinations on account of disturbance of the parts by vowel sounds and articulate efforts,—so I appealed to him. He gave me to understand that careful and correct examination could not be made through the nose. Careful and correct examinations can not be made through the mouth, I find however, so well as they can be made with the celebrated laryngoscopic mirror of Garcia.

Again to the piano: We see that it has three breaks, or registers —the same as the human voice. We also observe that the long eight foot 6 string regulates and governs the temperment of the piano. Every tuner knows this. The great problem is: how to there is a string about one-half its size, but another string is wound divide 13 by 12,—that is to temper the scale of 13 notes into 12 so that the steps between them are equal in relative pitch, and to make all these notes arrange themselves perfectly as they go from one to another. This Dillingham piano is the first harmonic scale piano made in the world on this principle. You will observe next to the C string that I have spoken of, which is eight feet long, that around it, about one-half its length, which makes it equal in weight to the long eight foot C string. This is done to have a properly regulated scale, also so that the eight foot string may be a convenient length for a piano, otherwise, when you are half-way down the scale, it would be manifestly a very awkward piano when you have finished several octaves below the eight foot C string that the piano requires. It would be necessary to have a string sixteen feet long, and to get the effects that the ear would be able to appreciate, you would have to have a sounding board that would occupy the length of a room; hence the eight foot C string seems to be the most reasonable and practicable. The winding of this increases the weight of the string and makes the pitch correspond, and makes it possible to begin with a length, so that when you have finished the construction of the piano it will be no longer than the C eight foot string required. Now how are these two strings, so wonderfully different in construction, arranged so that the quality is not changed by the manner of arrangement and the manner of being struck? I have explained to you the arrangement. The hammer, you will see, is placed at different angles of the string, at different points for the new arrangement than it was for the eight foot tone. Now this is quite analagous to the voice. The palato-pharyngeus is the longest string, or longest muscle that we have in the human mechanism. It is concerned with the three constrictors, wherein we have the two breaks, as arranged in the piano. It is connected with the pitch of the voice, just as the eight foot C string regulates the pitch of the piano. It has many arrangements, same as the string which is eight foot long and the string which is not half as long, with its weight increased by wrapping the extra string around. It is automatic and has to endure a certain tension, the same as the eight foot string does, and it has to arrange the whole singing apparatus, to-wit: Suppose you have a case of cleft palate, as in case No. 10, the upper portion of the palato-pharyngeus hangs in a thickened mass, in an entirely different arrangement, along the sides of the pharynx. What occurs to the piano if anything happens to the eight foot C string? The whole piano loses its regulation? What happens to the human voice in the case of the cleft palate? The fineness of overtones and partials, and the whole feature of articulation is changed. Even the obturator, or plate, would not overcome this,—the even timber and position is changed, —yet in how great and wonderful a manner it helps to regulate the action of the stylo-pharyngeus, and maintains the pitch mechanism. Such do I believe is the function of the palato-pharyngeus. Yet it is perfectly evident from the study of this palato-pharyngeus that it is a striped muscle, and governed by the will. The reason that a node is formed is that this muscle gives way in its autonomy. Along this same argument, let us take the crico-thyroid muscle. This, which according to the best authorities is absolutely a striped muscle and voluntary, is supposed to work in harmony with the other intrinsic muscles of the larynx. On the theory that the pitch mechanism is voluntary, it would seem that the internal muscles of the larynx are involuntary, both in structure and by nerve arrangement. The crico-thyroid is said to act in harmony with the intrinsic muscles. It is one of the principal cord-stretching agents, and never changes in its actions in the larynx, yet autonomy compels it to act with the intrinsic muscles of the vocal cords, which are all unstriped fiber, and involuntary, showing that by innervation at least we have an opposition to the argument of involuntary action. I am therefore compelled to assume for the sake of simple comparisons of voice subjects, from the study of the palato-pharyngeus and the crico-thyroid muscle, that the only way to look practically at the voice question is to study it from the standpoint of autonomies, which are controlled by the medulla of the spinal column, as well as in the brain.

Why not take the first of the great autonomies, beginning within from above—the naso-palatal—for instance: There seem to be autonomies governed by the valve-like sphincter, or fan-like muscle, such as the nostrils, the slightest compression of which will alter the quality of our tone. This cavity is closed off by another fan-like or sphincter-like muscle, the palate. The study of one portion of this muscular development which I have just shown you determines just how they should act to produce the partial overtones governing the quality and timber of the voice.

The second great autonomy is the oral cavity, governed by the three great valvular, fan-like or sphincter muscles, the lips, tongue, soft palate and epiglottis. From the wonderful chart "Consonants," which is painted by H. W. Merton, one can work out a very correct action of the tongue, for you see the action of every vowel and consonant by applying the tongue as suggested on the chart, and in so doing you can obtain as perfect a result as the instrument is capable of producing.

The third great autonomy exists between the palate, base of tongue, epiglottis, and the vocal cords,—or glottis. This may be styled the "momentic cavity." Here a wonderful mechanism exists in all the valves surrounding this cavity, and as I have said before, every valve portrays its action on the vocal cords, and produces that wonderful phenomena of voice-production, and also the formation of segmentation of the cords, which is revealed synchronously in the action of each upon the vocal cords.

Another and fourth great autonomy is the space between the vocal cords and the diaphragm, another great fan-like muscle. It regulates and controls in the same wonderful automatic way, and can be governed in the same automatic way as above, and as above we can see by certain macroscopic lines that it is not necessary to go into the individual muscular action or innervation.

The same principles as apply to the fourth autonomy apply to the fifth, or the space between the diaphragm and sphincter ani;

and the foundational power of all between the diaphragm and the sphincter ani will require but a slight study of all these various automatic arrangements to determine exactly how the human voice should act under its forces, just what the care of each should be, and just what abuse they will tolerate, instead of the present arrangement which will require the memory of 78,000,000 muscular actions or 15,000,000,000 nerve impetuses for one "ah" of tone.

Case 5: Trouble began six years ago; all turbinated bones removed in England four years ago; has suffered ever since with catarrh from dust exposure and cold, in fact, all through his life he has had one round of colds after another; left tonsil atrophied, and filled with cheesy deposit; left vocal cord and side of larynx in a state of akinesis. QUERY: Shall the left tonsil be removed? Whole larynx has turned more to the left side owing to the contraction which has taken place from the palato-pharyngeus.

Case 6: Exquisite high voice formerly reached C^2. At 18, had both tonsils removed, largest ever seen; weight, 175 grains. Is now singing in Philadelphia; at present singing songs every night, reaching high C, and now at the age of 23 sings high E^3 at all times and sometimes high F.

Case 7: Very careful, persistent singer. Sings solos in one of the New York churches. Had submucous resection, removal of two middle turbinated bones, and tonsils removed. Had constant break in voice between C and F. Voice at present very even and sonorous, with increase in range and ease of production.

Case 8: Removal of right middle turbinated bones for right antrum and right frontal sinus trouble. Has very small pharynx, and large larynx, with an epiglottis which clamps down the tone-production, leaving a small circular hole resembling half a washer. The result is—although one can see from her understanding of music, when she sings, that the mental attempt is correct—the instrument refuses to respond to the impulse: She has a voice that promises much, but does little, and is very limited. Voice in lower part resembles Schumann-Heink's—as can be seen in a few seconds of a Victor record, an excerpt from Schumann-Heink's "Mei und my Boy." The upper voice resembles Madame Guisippina Huguet's, as can be seen from a record prepared for this occasion, but never used.

Case 9: Used as illustration by Mr. and Mrs. Howard Brown. American, stout, mature, self-possessed, good style. Has sung solo bass in four of the principal churches of New York. Always sang from boyhood. Father and brother Episcopal ministers. Bass voice. New York Yacht Club address. Weight 192 pounds, 6 feet in height, florid complexion. Class 90, first class bass for concert, church, and oratorios. Range C, below, to G. Volume rich, full, carrying power splendid. Tongue normal action, and regular in shape and action. Flexibility and agility fair, resonance irregular, breath control good, but not always sustained. Pitch correct. Timber heavy. Studied with Webb Chester Allen, Miss Hattie Clapper and Charles Hawley. Close affiliation with Mendelssohn Glee Club.

Diagnosis: Epithelioma of tongue, occupying right side and right border and middle of tongue. Operation November 20, 1911, five-sixths of tongue removed, leaving greater part of stump on left side. Operation performed by Dr. Frank Hartley, New York Hospital. Cases have been heard of, of mutilated tongue, who spoke well, but none where tongue was cut out entirely, or the equivalent (approximately) of the condition. To test his condition patient was requested to sing arpeggios on all vowels from C to E, also scales, also to recite the alphabet, while comparing the procedure with Merton's accurate and complete chart in oil (See Figure 4). His speech for the first three weeks was unintelligible. *"Ah"* made with the only portion of the tongue left, was all that could be desired; "oo" was fair, but *"E"* was impossible. The removed tongue seemed to have created havoc in his speech and automatism that was well nigh impossible to be understood. Now, six months later, by a constant course of reading, repetition of vowels and the alphabet, his voice is good, and his articulation fair. At my suggestion, Dr. V. E. Mitchell made a movable tongue, fastened by a pivot and slide catch attachment to the lower molars that gave a tilting and upward thrust of about ½-inch, which gave a much better *E* and *Ah*, and also helped materially in the formation of consonants and in eating, but which became irksome to the patient. It is marked exhibit No. 16. A remarkable rearrangement of the floor of the mouth occurred, in that the four layers of chin muscles have advanced upward almost flush with the teeth, the palate is relaxed, with smaller arch, sinks lower, and seems to have come forward

Case 10: Cleft Palate, referred to in Case No. 4.

Case 11: Able to sing one week after tonsillectomy, and will continue to sing. Great artist, and very beautiful voice.

Case 12: Removal of turbinated bones of one side, with opening into the sphenoidal sinus, which upon opening allowed her to have five or six extra notes, and increased nasal resonance.

Case 13: Young man, 13 years of age, voice not yet changed, just about to change. Beautiful charming voice. Tonsil and adenoids taken out two years ago has not caused his voice to change a bit. It retains its beautiful quality. Is capable of singing any mezzo soprano aria written.

Case 14: Young man sang high soprano, C^2, with ease. Sang ballads, oratorios and opera selection. Sang in vaudeville and has been recognized as a first class singer, capable of earning $200 per week. High soprano with woman's quality; voice in constant use up to twenty-ninth year. Had a rather small nose, small features, retreating chin. About 6 feet tall. When he was five years old, entering into a melee with the boys, was kicked in the spine just above the coccyx. The result was that he was very ill and could not walk; suffered great pain along the spine in back of neck for several months. It was noticed at this time that there was a marked arrest of the genitals; this remained until he was 29 years of age, when he married. From December to August his features began to change, and now he has a well formed nose. The turbinates, which were crowded, have lengthened out, and his nose on the inside seems to be quite normal. His epiglottis, which was very small, has grown rapidly, and is now a normal size. A large blue-black vein extends from the top of the epiglottis to the epiglottic fold. The tonsils are very much larger, though far from normal, yet well formed and regular. The voice has changed from a high soprano to a full-fledged low voice, baritone quality. Nothing abnormal is seen in this man, and nothing abnormal in his family. The condition is probably due to the arrest of the genitals, and possibly also of the pituitary body. This whole thing reminds me of the condition which I am accustomed to take very strict notice of in children between the ages of 12 and 14 when co-incident with the establishment of menstruation and the sexual function, the nose, especially the nasal bone and the vomer, and those in front of the pituitary body, seem to take on a special growth, during which time I advise against operations which affect those parts just referred to, as likely to arrest development of the same. At the bridge of the nose the greatest macroscopical change is noticed.

Case 15: Has baritone voice with range from F to F, two octaves. Produces big tone. Studied in Milan, Italy. Very fond of dramatic singing. Lacking in nasal resonance. Good breath control. The pitch is fair. Complains of general heaviness, and general lassitude; right undescended testes, with distended vescicles; large lingual tonsils and faucials, in which there are cheesy deposits.

Query: What effect would vesciculotomy and resection of the testes have on the voice?

Vocal art science abounds in abnormal conditions and in the study of these rare cases we must, from the very paucity of material for observation, be considered as mere students of singing.

Physiology is equally precise, and psychology is beyond the border line of vibrating influence of the other two, and is based upon the interpretation of the mental attitude. Pedagogy permits of the expression of all three, with due reference to both mechanical and psychological. It remains, therefore, for the four to come together and re-arrange out of this mass of facts and theories something which is equally tangible to all. For it is plainly evident that not one can stand alone. How shall we inaugurate such a movement? By the actual meeting of the four parties concerned, with living examples, each giving his findings in his own terms, and then providing expression to cover the requirements for correctness for every phase of vocal art science, to-wit:

I now present to you Mr. Munter and Miss Graham. Miss Graham has never taken a lesson, but has attended both concert and opera as an auditor. Nothing is known of the range of her voice; she has absolutely no knowledge of music, nor does she possess any musicianship. I will now take a disc from the phonograph, which Mr. Munter knows very well, but of which Miss Graham has no knowledge. Assuming that he be endowed with all requisites for the correct *vocal art science* demonstration, he will show you how easily he can by his psychic method produce a Melba, with due allowance for psychic disassociation and limitation.

Miss Graham called at my office February 26, 1912, suffering from an enlarged gland at the angle of the right jaw, result of a follicular tonsilitis.

Before coming into the office had heard a singer tried out with F scale. In course of the consultation she remarked that the one wish of her life was that she might sing like an operatic artist. Her voice was tried in the usual manner, with a very low marking, to which she replied,—"I don't see why I cannot sing like the great artists." The answer given was elusive and to the effect that she should be hypnotized like Trilby. To my surprise she told me that her employer had often hypnotized her to stop her headaches. The idea suggested itself that he hypnotize her to sing with a Victor as a medium of communication of the vocal song from his mind to hers.

March 2: Patient returns with gland much more swollen and tonsil again full of cheesy deposits. The advice given was to allow the gland to suppurate and when a little more pointed to make a very small incision in order to avoid scarring the neck. During this visit the patient informed me that her employer had hypnotized her as I had suggested before, and that he said she sang wonderfully well, but she could not realize it.

March 3, 10, 13, 17, 24, I was invited to witness the hypnotization. March 3, met at the house of Mr. Munter, who hypnotized her by direct methods, using only eye mastery and occasional brow stroke, both sitting in upright chairs for twenty minutes, until the patient was in profound, deep hypnotic sleep, head lying relaxed and back on chair. At this point he began suggesting very quick and deep abdominal breathing, with lips closed and nose open, declaring that breath was the power of song. His next step was a command: "Arise, you always wished to be an opera singer, now you are the greatest singer in the world." The Victrola, already adjusted at 76, was started on Mme. Schumann-Heink's record of "The Rosary." The subject with eyes closed arose slowly, with the help of Mr. Munter. In less than thirty seconds she began to sing in a very irregular way, then suddenly straightened up and burst forth into excellent rhythm, into as excellent an imitation of Madame Schumann-Heink as one could expect.

On consultation with Mr. Munter it was deemed best to bring her out of the hypnotic state and try the subject's voice with something that every one should be familiar with. With several vigorous shakes of her head and the statement that her mother was waiting for her, she opened her eyes slowly and began to laugh heartily. Although everyone in the room complimented her, she denied that she had sung—that she knew nothing of what she had done, and failed to recognize the songs. After two minutes of interrogation she was asked to sing "Home Sweet Home." Her rendition was so devoid of all the artistic points of the hypnotical reproduction of "The Rosary," wanting in all the requirements of even an ordinary girl's singing, the voice so piping and constrained, that it made all laugh. In seven and one-half minutes the subject was again put under hypnosis, and Mme. Guisippina Huget's record, "Mignon-Polonese" was started, but the patient did not seem to respond. In fact, the hypnotist did not seem to like the record and explained that the music was unknown to him, and that he could not suggest to her anything that he did not know, and that she could only receive what he was able to transmit. The record, "I

Love, Love You," from the Red Mill was selected. This record was attached and in forty seconds she began and continued until the end without a break in rhythm, and in a finished and finer form than the recording artist.

March 7: A meeting was held with Prof. Hallock and Dr. Muckey in which she sang for many hours under less favorable conditions—the gases in the colon seeming to prevent a complete hypnosis in spite of violent abdominal massage. In an hour's time, however, she was thoroughly under control and sang at least seven times in good form.

March 24: She was hypnotized in seventeen minutes and sang almost continually before several physicians and other folk from 8 p. m. until 1 a. m. At times there seemed to be physical exhaustion, but upon the suggestion of deep and rapid breathing she arose to the suggestion of song, in splendid shape and sang just as Mr. Munter, Dr. Muckey or myself suggested. Mr. Munter conveyed his power, each one compelling his idea to the mind of the singer, but I must say her rendition as a whole was better under Mr. Munter's influence for the reason that both Dr. Muckey and myself were more interested in the science than in the art, hence our suggestions were coupled with the desire for pure tone, while the hypnotist was for the art of the singer, of the song, and who knows, perhaps of the idea of the composer. It would seem from this singular and remarkable case that the hypnotic suggestive power of the pedagogue might be given often enough to have her realize by automatism just the necessary organic union between the psychology and the physiology of voice-teaching.

The great list of those artists who have gone before, with their great breath control, their phenomenal phrasing, their wonderful range, quality, and their various and magnificent attributes, attest that there always have been great singers and always will be. We examine their histories and find that there is a steady demand for a higher standard. Medical schools have given us line upon line and precept upon precept until we embody their sayings and start their systems of education upon the present results of these selfsame schools. The standard method adopted by our medical critics have forced us at present to read along certain lines that are most beneficial to our present state of living. Standardization only results from approximation of the real truth.

And now we arrive at the all important and vital question: *can we establish a different nomenclature from a medical standpoint?*

Singing teachers and laryngologists, as a rule, use arbitrary expressions to convey meanings which words as generally used do not, but a "standard system" no doubt would produce its own phraseology, provided more expressive and suitable terms could be coined. How shall this be done practically, so as to be appreciated and understood by all? First—by having a concert given by a soprano, and alto, a tenor, a baritone and a bass,—solo and ensemble. Stationed about the hall with cards of critical analysis, as per sample card already presented to you in this lecture, will be a committee of: (1) Ten voice teachers; (2) ten anatomical experts; (3) ten physiological experts; (4) ten psychological critics. Their findings and expressions dictated from their special view--points will be handed to a committee of grammarians from Yale, Harvard, Columbia, Princeton and Trinity who will read and review these criticisms from Victrola records, and establish a nomenclature for the world to use, so that we may establish for all to understand and to make progress, a conciseness and unanimity of expression.

In this little essay we have presumed to present a rather original grouping of so-called autonomies. I have referred to the autonomy situated between the nares and the soft palate. By calling this the "Em-en-ing" space, or autonomy, we will have done away with a huge number of inadequate words and terms formerly used in the description of this space, and at the same time we will have conveyed an accurate comprehension of it by the very sounds used in pronouncing the letters, bringing about the precise effect which is most desirable. By this method we could construct a new nomenclature or language, increasing its scope and defining it more accurately than it could have been done in any other way.

Take the next space, or autonomy, which has taken over ten lines to describe—from the lips to the soft palate, to the base of the tongue and posterior pharyngeal wall—this could be called the "phonoric" space, and the next the "pharyngic" or "resonantic," and the last, the "momentic" or "laryngine." All this gives us an accurate and concise idea of the different spaces in which distinctive vocalization takes place.

When it was found out that the reception could not be given to President Taft, and other severe features of the program would not be practicable, Miss Conlin, the daughter of an eminent physician, agreed to sacrifice herself at the altar of criticism, but inasmuch as in all these great occasions, "Man proposes and God disposes," all thoughts of criticism were lost in the beauty of her singing,—although no one noticed the fact that one month before this event she had the turbinates removed, a sub-mucous resection for an enormous deflection of the septum, which facts no one noticed, nor called attention to the defect in her singing, so absorbed were they in the beauty of it. This operation was performed just one month before her appearance at this meeting and this was the first time of her appearance in public following the operation.

Vocal art science stands for the consummately true and beautiful in singing. In it are joined the God-given intuition that we call Art, and Science, which is the exact knowledge of *cause* and *effect*. Science arrives at the same conclusion as Art intuitively grasps, but Science laboriously works its way to the point, while Art is transported thither on the magic carpet of the fairy-tale. Art is to singing what the soul is to the body. Science is sure, even when, as must often be the case, inspiration, the breath of life to Art, is lacking; and finally plodding Science can often awaken sleeping Art under the most adverse circumstances.

However, neither vocal art, nor vocal science is sufficient alone. That art is most perfect whose basis is science,—and who shall say where art begins and science ends? The singer must weld art and science into indissoluble union. He who does this practices the most exquisite and ennobling of arts, giving messages of inestimable uplift directly to the human soul; he is the true exponent of *vocal art science.*

If, with the perfected oscillograph, and the telegraphone, we can record and produce, at will, all the tones of the human voice, with all its ramifications of timber and overtones; if we can construct scales of perfect tones, such as would be sung by a Melba or a Caruso; if we can combine with this the kinetoscopic representations of the artists singing these tones, and the x-ray photograph, when this has been done,—then, it seems to me, the millenium of vocal art science will be at hand, for a real standard of voice-production will have been established.

To the brave of spirit, to the steady of purpose, to the earnest of endeavor, then, are presented these observations upon *vocal art science!*

Summary of Suggestions Developed from the Study of Vocal Art Science and Tone Standardization, from the Standpoint of Use and Abuse of the Voice, in Connection with which the Following Finding is Presented:

(1) Suggestion of a natural basic law for a standard pitch of male voice C^{512} and C^{1024} for female voices.

(2) Establishment of phonetic values for turbinated bones, dome of pharynx, hard palate and epiglottis.

(3) Demonstrated before Convention that removal of both middle turbinated bones, where in male and female voices the "G" overtone had been destroyed by double frontal and antrum sinus trouble, and hypertrophy with poor drainage, restored the overtone "G," developing magnificent overtone and fundamental at B*b* as shown by these two cases at the Convention.

(4) Developed the fact that vocal cyclones detonate in the nares and cause special reinforcement of overtones in dome and turbinated resonating spaces, by particular apparatus, in which the cyclonic movements of smoke in the cavities, showed the desired results.

(5) Developed the possibility of limiting the compass of the human voice from C_2 to C^3, because after that period of the scale, overtones are inharmonic.

(6) Developed the idea of five vocal units in voice production; that these units are automatic and, when combined with psychologic action, correct voice is produced, by simplifying augmenting methods already in use.

(7) Demonstrating by four cases of mutation, the possibility of mutation in causing subsequent development of turbinated ethmoid and vomer bones, as well as genital enlargement, occurring after marriage—at 29 in one case—and the usual development of those bones in mutation in those cases, especially the transformation of the retrorse conditions of the nasal bones into finely formed bridge; the complete rest of those cases for at least three years after mutation begins and the necessity of complete eradication of all deformities and all abnormalities at this period, especially tonsillotomy, with the eliptical bevelled MacKenzie after forced expression, always leaving capsule intact or in correct condition.

(8) Special illustration of psychic voice, allowing sleeping art to be liberated and brought forth by hypnotism.

(9) Inspiration through nose, using psycho-physical sense of smell, causes contrapuntal poles of control at nostrils and sphincter ani, their influence is concentrated at the middle of the manubrium, the cyclones of air generated at the cord with detonation into mouth and nostrils, thence converted into articulate sound and reinforcing resonance by oral and nasal cavities.

(10) *In voice production there are five voice units to be considered, which are governed by the medulla and brain*: (a) Nasal or resonatic autonomy, or first voice unit; (b) Oral or articulate; (c) Laryngeal or momentic, where the momentum is developed; (d) The thoracic or gaseous, the bellows part of the voice; (e) The abdominal or semi-solid support of the voice.

We have the first voice unit (nasal or resonatic autonomy) when the physiological control depends upon the contrapuntal poles of power at the ends of the nasal cavities. These are situated, first, at the opening of the nostrils and the closures of the palate. Its point of poise, or mechanical center of resistance, is at the bridge of the nose.

The second voice unit (oral or articulate) is physiological control depending upon the contrapuntal poles of power at the ends of the oral cavities: (a) At the lips; (b) at the junction of the tongue and palate, against the posterior walls of the pharynx. Its point of poise or mechanical center of resistance, is at the arch of the hard palate of the mouth, on the level of the eye teeth.

The third voice unit (the laryngeal momentic cavity or autonomy) is momentum developed by air against the vocal cords. Its physiological control depends upon the contrapuntal poles of power, the vocal influences of which are felt between the crico-thyroid niche and fifth vertebra. Its point of poise, or mechanical center of resistance, is at the crico-thyroid niche.

The fourth voice unit (or autonomy) is the thoracic, gaseous or bellows-like cavity, which contains everything between the vocal cords and the diaphragm. Its physiological control depends upon the contrapuntal poles of power; (a) at the vocal bands; (b) at the diaphragm. The point of poise, or mechanical center of resistance, is in the manubrium, or breast bone.

The fifth voice unit (the semi-solid supporting autonomy) is confined between the diaphragm and sphincter ani, the physiological control of which depends upon the contrapuntal poles of power; (a) at the diaphragm; (b) at the sphincter ani. Its point of poise, or mechanical center of resistance, is at the umbillicus or navel.

The combination of units by mental control gives us the cavity between the nostrils and sphincter ani, or end of spine, and its physiological control depends on the contrapuntal poles of power at mouth and end of spine. Its point of combination of the various units of poise, or mechanical centers of resistance, is at the center of the manubrium, or middle of breast bone, called by the old Italian School "Voice de pectore."

The psycho-physical senses, namely, sight, smell, hearing, taste and touch, are called into activity by inspiration through the nostrils, re-activated by its egress, thus affecting the aforesaid senses, so that by their correlation we have an added mentality or psychical force.

(11) Laryngo-pharyngeal observations inaccurately owing to lack of a standard.

(12) Physicians, physicists, teachers and performers must work together for harmony of ideas.

(13) Vocometers for measuring voices suggested in 1891 by me. Ear of the maestro should have the accuracy of a vocometer.

(14) Ignorance of any method and acquaintance with incorrect methods said by Mr. W. J. Henderson to be the most prolific causes of voice failure.

(15) How is tone produced? Correct voice analysis necessary. Standard system must involve control of physiological functions, coupled with command of the metaphysical.

(16) Marking scale should be 100 points—so much for each range, resonance, breath control, intonation, attack, volume, flexibility, agility, legato, mezza di-voce, articulation, pronunciation, temperament, imagination timber, etc.

First-class, 90 points; second, 75 to 80; third, below 75; voice producing mechanism one of valves, autonomies and polar centers of power.

(17) Caruso, Melba, the standard of vocal excellence at present.

(18) Diseased conditions should be treated and when necessary operated, in order to have throats clear for singing. In order to produce a standard, abnormal conditions must be considered, in order to arrive at the normal.

(19) Present nomenclature misleading and often meaningless, vocal art science will, of itself, evolve a better one.

(20) Committee of investigation needed to determine a new value to vocal apparatus, assigning positive pitch to partials. Human tone contains eight parts—fundamental overtone. 1. Octave made in thyroid cartilage; 2, at epiglottis; 3, octave by hard palate; 4, third in pharyngeal dome back of posterior walls; 5, octave by inferior turbinate; 6, fifth by middle turbinate; 7, diminished seventh, by superior turbinate, the frontal and sphenoidal sinuses, antrum, ethmoid cells and Eustachian prominences are auxiliary resonators for the upper partials.

(21) From the study and results of various operative procedures, it is necessary to establish a standard for phonetics and voice production.

(22) Causes influencing the autonomies: a—We may consider the depression of any of the hollow spaces, or autonomies, or any particular depression of same, likely to modify their size or form, thus changing the character of the sound produced.

(23) b—Anything which would occur within these autonomies to change a proper action of the nerves or muscles, or to interfere with a healthy condition of the mucous membranes, also the cleft palate, enlarged tonsils, stricture of the anterior nasal passage, or anything of a like abnormal character growing within posterior nasal cavities, as well as inflammations, which make it difficult to arrange autonomies in the usual and necessary way.

(24) c—The influence of diseased tonsils, swollen uvula, cystic growths, enlarged lingual tonsils, paralysis of the pharyngeal muscles, paralysis or tumors of the epiglottis. In this connection I might also add that false teeth play an important role in the modification of the natural production of sound from these autonomies.

The septum of the nose has an important role. For example, I call to mind one of my patients who said that there was something the matter with his nose, because in singing the termination of words ending in "ing" he found that he had a very disagreeable nasal quality, which belonged really to "nasality" than to nasal resonance. To illustrate: In singing the word "morning" it would seem to have a peculiar nasality. No matter whether he produced it with his finger applied to his nose, or whether he put other vowels before it so as to get it out, the result was the same.

On examining him I found that the tubercle of the septum impinged against the right middle turbinated bone, causing considerable catarrh and greatly aggravating, if not producing, coryza at times. The nasality disappeared entirely from his voice on the removal of the trouble.

Still another instance was that of an operatic tenor of prominence, in whom I noticed a tendency to break in scale sounding. This break was more pronounced at C^1 and at E^1 in the medium voice. In addition, he had a reprehensible tendency to give nasal or catarrhal color to all tones above E^1. I found an adenoid. It was quite as large as a good-sized hickory nut, and served to block up completely the dome of the pharynx. From this growth hung stalactic forms of mucous. At first he was unwilling to submit to adenotomy. A little cocain was applied and with a single sweep of the curette this singer was minus an adenoid. Within ten days his voice had extended from B^1 to the high D^{11}, and even to high E^{11} natural, which revealed to me the fact that the muscles and mucous membranes could draw the hollow spaces or autonomies into five or six additional spaces of required size sufficient to add five half tones to his voice.

If it is true that the tones of the voice are exclusively formed in the larynx and that the autonomies are nothing but reflecting resonators, that man could not have gained from the small operation the additional five or six tones. But the autonomies being necessary for the tone building of the additional tones and also being able to form after adenotomy was performed, five additional tones could easily and quickly be sung without the physician treating the larynx. In this case the larynx, or rather the vocal cords, vibrated easily for production of these tones, but without the proper autonomies the tones could not be produced. *Consequently, the autonomies must have more to do with tone building than is generally admitted to-day.*

Again, I had as a patient a singer in one of the Catholic churches; during a holiday festival her throat became filled with the smoke of the incense. This irritated her throat and caused a troublesome cough, which affected slightly the vocal cords, producing as well an absolute inability to form proper hollow spaces or autonomies. She lost her voice entirely above the top F11. It required fourteen days to effect a cure. Then she stopped singing for six days and afterward sang in church, and the difficulty returned in augmented form. The succeeding week she wisely rested and a cure was perfected. However it might have been administered, rest did far more than any amount of medicine would have done in this case.

There comes vividly to my mind in this connection, a prominent New York singer who is a staunch advocate of my views. While on a concert tour he suffered from acute laryngitis and sought advice from a physician who honestly tried to aid him, without success however, because of injudicious use of the spray and lack of special knowledge and most effective treatment. He used menthol and eucalyptus as a curative in the spray, a combination affected much by a certain class with good intentions, which, for a time, gives to the throat a delightful sense of coolness. He stopped singing and lost nearly $1,000 in engagements. He then went to his room and to bed, where he remained for three weeks, his temperature being carefully watched. He was most careful not to expose himself nor to use his voice, and a perfect cure was the outcome.

As the result of years of practical observation, I am of the opinion that most, if not all, of the defects of voice-production are dependent on the relationship of the autonomies to the vocal cords; that the muscles and mucous membranes of these autonomies are generally the first ones to be afflicted. Resultant sicknesses, I have observed, are reflected to the vocal bands, in a manner peculiarly unique and systematic, to parts of the larynx, and from the appearance of the vocal bands themselves the physician is enabled to locate some of the troubles in the autonomies.

From what I have noticed, the frequency of nodes occur in the following order: (a) at C sharp; (b) at G sharp; (c) at F sharp, and (d) at B flat.

These keep a relative position in ascending the scale, showing that the tension and increased muscular energy that are brought to bear in the autonomies in upper note singing, create a like effect upon the vocal cords, beginning from the arytenoid to the thyroid end of the vocal cords. In brief, the higher the break in the voice the more anterior the development of the nodes in the vocal cords.

Despite the fact that the conclusions of celebrated writers seem to indicate that these nodes occur only at the junction of anterior one-third and posterior two-thirds of the cords, I have observed these nodules on five distinct cases.

I will cite here the method which I have followed in diagnosing: The patient is to take a position opposite the examiner, and the E scale is to be used. The method pursued is as simple as that of a man passing out on his own doorstep and listening to the sound of the approaching cars. In my own case, within a few yards pass the trains of the elevated railroad, the Sixth Avenue and Broadway lines. I am able to tell which of these cars is passing and the direction it is taking. In a way similarly intuitive, from continuous observation the debility of the patient will be revealed to the trained ear of the physician while displaying his vocal powers, in speaking or singing, and often by reaction on corresponding muscles in ourselves. I first make my patient sing the scale of E in single notes. This, it will be noticed, brings in G sharp and C sharp, which are vital points in the changing of our autonomies. Should the voice break at either point we will know whether the injury exists at the junction of the base of the tongue with the pharynx, or with the epiglottis, or whether this has been severe enough to cause a node at G sharp. By this break, I mean, in a cultivated singer, the perceptible change of voice in timber; I do not mean a change of the register of the voices. Should it be at C sharp, then we know that there is possibly some injury in the region of the soft palate, or in the pillars of the pharynx, or at the base of the tongue, or some follicular enlargement which interferes with the reflexes in the posterior wall of the pharynx. Should there be a blowing sound down the scale, between G sharp and E, we must look out for thickening of the arytenoid or interarytenoid spaces. Should this be a higher voice, we will then try on the G sharp scale, and should the voice be unable to reach the portion of the scale above G sharp, then there is some difficulty with the pharynx, perhaps a post-nasal growth or secretion, which had interfered with the action of the muscles of the soft palate. Should the quality of the high G sharp be forced, we then direct the patient to sing through the nose. And if there be an inability to produce nasality by pinching the nose to get the interruption of sound, then we will know that there is some growth or some constriction of the cavity or caliber of the nares interfering with the auxiliary autonomies of the nasal cavity.

I submit to you one other case—a most wonderful instance of cleft palate, which nearly upset my observations of autonomies: This patient had a very marked cleft palate and by opening the mouth you could see the posterior nares in all its details. Her ordinary conversation was thoroughly blurred by the usual defects presented in such cases, yet she was able to sing a range from A flat to high E^{11} without any perceptible break, and that, too, in the beginning of her singing career, before a false palate had been introduced, which markedly helped her ordinary conversation.

The breaks, however, were, to a certain extent, visible in this voice from C^1 flat to E^1, in the usual points of so-called change in registers. For a long time I could not reason this out, until the thought was suggested to me by Mr. Wangemann that the same condition was produced by the thickened oral wall so prominent in these cases, viz., dividing the air chambers in such a manner as to produce the same effect that she would have had had she possessed a normal palate.

(25) d—Autonomies even more than vocal cords account for the changes in quality and timber, registers or so-called passages in the human voice; vice versa, lack of harmony in muscular action and disturbances of mucous membranes governing autonomies must of necessity cause voice failure in formation of tone. Disturbances on the surfaces of autonomies are invariably reflected on vocal cords.

(26) e—It is an axiom almost that troubles in the higher resonator chamber (nasal cavity) reflect themselves in the anterior part of vocal bands. A lack of proper use of the post-nasal cavity will cause irritation or nodes, and if they be produced they will occur on the anterior end of the vocal cord.

(27) f—Disturbances in the middle, second or oral hollow spaces reflect their weakness upon the middle of the cords.

(28) g—In the lowest hollow space the same principle exists to create disturbances in the posterior end of the cords, especially if anything interferes with its normal position of pressing on the spinal column.

(29) h—A device for showing the possibilities of accomplishing the isolation of the different resonating chambers is shown by simple procedure as used by me. E! Ah! Oh!

In E the tongue closes off the oral and partly the laryngeal hollow spaces. Ah allows the oral space to vibrate and not the laryngeal. In oh we have all of the spaces in action.

This simple combination of vowels shows in a primitive way how a tone can be qualified or amplified through force applied to the vocal bands necessarily sustained by the actions of the autonomies. The action of the larynx alone cannot do this.

(30) i—Again, in my experience, it is almost axiomatic that troubles of the lower part of the body reflect their ills upon the anterior portion of the vocal apparatus and vice versa.

(31) j—It is a fact heretofore not known that the autonomies must be drawn, form and shape themselves into a proper condition for tone and production of voice, including pitch, *before* there can be any laryngeal action for the production of such tone.

(32) k—The timber, "klangtint" and quality of a tone and the character of its emittance is shaped, formed and sustained in any and all the different vowel sounds entirely in the autonomies, subject to and influenced by vibrations of the vocal bands; and I would like to state here that, while we *do* know that the vocal bands vibrate, the shape, form, manner, character and number of such vibrations for any given tone of and by the vocal bands are *not positively and absolutely known*, and must, necessarily, be a subject of investigation by physicians and physicists for years to come; for while there are a great many different assertions about the action of the vocal bands and larynx, the proof of the truth has yet to be made.

(33) l—Disturbances in nerves, mucous membranes and muscles necessary for action of autonomies are anterior and prior to muscular action of larynx and vocal bands, and severe disturbances of mucous membranes, nerves and muscles in hollow spaces deprive the larynx of the possibility to vibrate for the production of proper tones.

(34) m—The action of the autonomies influences the vibrations of the vocal bands to such an extent that in different voices the vocal band action appears to be radically different, going even so far in one class of tone (falsetto!) to vibrate for tone either "whole" or "one respective two-thirds" in different individuals. In consequence, it seems evident that segmentation in vocal bands may be caused by the action of autonomies, but the manner and character of vocal band vibration or segmentation is still quite an unknown quantity to-day. In this connection, I may say that, in several very beautiful baritone voices, we observed that for the very lowest tones the vocal bands shortened, which indicates the exact reverse vocal band action of the present theories as generally held to-day.

(25) n—The superior laryngeal nerve supplies both motion to the larynx and sensation to its mucous membranes, consequently application of sprays to its mucous membrane will at first increase tension of the muscular apparatus of vocal bands and ultimately over-stimulation by spraying causes their collapse.

Suggestion of a possible influence of the peneal gland and pituitary body in the development especially of the nasal turbinated, ethmoid and vomer bones at the time of mutation.

Finally, combining this summary into the complete tests for the correct action of these autonomies, as indicated by a macroscropic study of nose, tongue, palate, chin, neck, chest and abdomen, will have abbreviated present systems of voice production, as well as added to their comprehensiveness, a matter which will, later on, be more fully gone into.

22 W. Thirty-first Street.

Local Anesthesia of Larynx by Nerve-blocking with Alcohol. M. PAVESI and E. CURTI, *Gaz. degli Osped. e delle Clin.*, May 30, 1912, p. 681.

The authors report excellent results. Before the injection, a 2 per cent stovain solution is injected to lessen the pain resulting when the alcohol comes in contact with the nerve. An anesthesia of from one to four days was obtained. There are no contra-indications to the operation. A few blood extravasations resulted but were of no consequence. ED.

REPORT OF A CASE OF APHTHONGIA.

DR. F. VICTOR LAURENT, PITTSBURGH.

Aphthongia is a very rare affection, only three cases having been recorded. The condition was first named and described by Fleury, but according to Kussmaul, the first case was recorded by Panthel of Ems in 1855. Fleury defined it as cramps in the territory of the hypoglossi, which set in whenever an attempt to speak was made and which rendered articulate expression extremely difficult or impossible. The cause is great emotional excitement or fright.

My patient, Lillie S., is 15 years old, tall and well-developed for her age, and has enjoyed good general health, although she was extremely nervous when she first came to me for treatment.

She has hypertrophied tonsils and adenoids and has had frequent attacks of tonsillitis. I hope to remove the tonsils and adenoids, but so far the patient and her mother both object strenuously to any operative procedure. The hypertrophied tonsils and adenoids are not the cause of this condition, but tend to prevent her from using her voice properly and increase her nervousness and diffidence. Her respiration was also very poor.

When 9 years of age she fell down a flight of steps and hit her head on the pavement, and while not injured apparently, she suffered a great fright. Before this time, she had had no speech-difficulty, but after this fall, on attempting to speak, the tongue would be pulled back and the lower jaw pulled downward and to the right side. This condition has lasted for six years, for when I first saw her she still had these symptoms and I noticed also that when she attempted to speak, the extrinsic muscles of the larynx supplied by the hypo-glossal nerve (the sterno-thyroid and thyro-hyoid) and the sterno-hyoid muscle fell into violent vibrating movements. This was only on the right side. Patient said she felt as though a hand was clutching her throat and pulling her tongue back and that she felt great pain when trying to speak.

Now, after six months, she says it does not hurt her at all to talk, the feeling of constriction in the throat has disappeared, and there is no muscular spasm, although there is still the backward traction of the tongue to a slight degree. She still has some trouble with the linguals and will have to remain in my care for further training.

The treatment used was massage of the offending muscles and teaching her to remove the strain from the laryngeal muscles by "bringing the voice forward." This was done by making the attack of the initial tone with the lips closed, (in which way only a pure head-tone can be produced) and afterwards using the head tones with the lips just far enough apart to permit of articulation.

Jenkins Arcade Building.

Acoustic Nerve and Salvarsan. George Gellé, *Rev. hebd. de Laryngol. d'Otol. et de Rhinol.*, Oct. 19, 1912.

Gellé believes that in the present state of our knowledge, mercury and the iodids are preferable in the treatment of syphilitic auricular lesions, while in nasal and laryngeal lesions preference be given to salvarsan as its effect in these cases is remarkable.

Scheppegrell.

Treatment of Acute Mastoiditis and Severe Otitis by Bier's Hyperemia. Eschweiler, *Ztschr. f. Ohrenh. u. f. Krankh. d. Luftw.*, Band 65, Heft 2-3, 1912.

The writer reports ten cases of severe mastoiditis that have been cured by puncture of the mastoid abscess followed by repeated suctions or, in the absence of a fluctuating mastoid abscess, by applications of the "hyperemia ribbon." This treatment is contra-indicated in: (1) Suspected cerebral complications; (2) labyrinthine suppuration; (3) so-called masked mastoiditis, where little or no suppuration of the middle-ear is present and where nó abscess is formed over the middle-ear; (4) suspected sequestrum formation and cholesteatoma.

The treatment of mastoiditis by hyperemia has to be interrupted in: (1) High fever; (2) the absence of a marked improvement during the third week of treatment. The cases of mastoiditis most suitable for hyperemia treatment are those with abscess-formation above the mastoid plane or below its top (Bezold). Glogau.

EIGHT YEARS OF CHLOROFORM ANESTHESIA IN NOSE AND THROAT SURGERY.*

DR. CHARLES PREVOST GRAYSON, PHILADELPHIA.

When for a number of years one has obstinately defied the opinions and prejudices of his friends and colleagues about some unconventionality of surgical procedure, and when for this long time he has turned a deaf ear to their warnings and their prophecies of ultimate disaster, the time finally arrives when he must either cry *peccavi* and renounce his heresy, or else claim that his persistency has been fully justified. Perhaps it might be considered somewhat premature for me to make this claim now with reference to my use of chloroform as an anesthetic, but even if I avoid this possible criticism by postponing the claim for a few more years, it may not be too soon for me to offer you what I may at least venture to call a preliminary report of my experience with it. So general and deeply rooted is the prejudice in this northeastern section of our country against the use of chloroform as a general anesthetic, that I could not fail to realize when I began to employ it for this purpose that I was exposing myself to the shafts of criticism and I have been perfectly conscious throughout these eight years that the occurrence of some otherwise inexplicable fatality would at once put chloroform and myself on the defensive and that, to slightly alter the words of Thomas Jefferson, I would be forced by a decent respect for the opinions of my fellows to declare the causes which had impelled me to dissolve the bonds which had hitherto connected me with ether. As a preface to this declaration, I wish to say that my use of chloroform has been largely limited to the briefer operations of nose and throat surgery. I mean by these the removal of adenoid growths and of the faucial tonsils, the straightening of septal deviations, certain of the sinus operations and several tracheotomies. In giving you the reasons for my abandonment of ether, I do not propose to try your patience by dwelling at any length upon the relative merits and demerits of ether and chloroform as general anesthetics, for I think I may assume that if it were not for the immediate and remote dangers that have been attributed to it, chloroform would be regarded as an ideal anesthetic for such operations as I have mentioned. Its inoffensive odor, its freedom from irritating effect upon the air-passages, the quickness not only of the narcosis that it produces, but of the patient's emergence from it, and finally the comparative, if not complete absence of the nausea, retching and vomiting that follow as a rule the administration of ether, all these features combine to make its appeal to both the surgeon and the patient a very powerful one.

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*Read at the meeting of the American Laryngological, Rhinological and Otological Society, May, 1912.

Almost always, I think I may say, the entire upper air-tract of the patient who has a pathologic nose or throat is apt to be both hyperemic and hyper-sensitive, and, as a consequence of these clinical features, an anesthetic the vapor of which is irritating to the respiratory mucous membrane is objectionable. Such an anesthetic is ether, and although its disturbing effect may be partially overcome by preceding its administration with that of nitrous-oxid, yet this Tandem method of employing the two is apt to result in even an increase of the vascular engorgement which for several reasons is, to say the least, undesirable. Again, the post-anesthetic nausea and retching characteristic of ether narcosis certainly tend to promote and prolong a capillary hemorrhage that in their absence would usually quickly subside. It was for these reasons that I thought myself justified in disregarding for a time our local prejudice against chloroform and in satisfying myself as to whether or not it was well-founded. The time has lengthened to eight years, the number of operations in which I have used it has reached and passed 3,800, and I have yet to experience my first regret for having ventured to tread, what many seem to consider, the crape-bordered pathway of chloroform. And to do full justice to chloroform I must acquaint you with several risks to which I have subjected both it and myself, in spite of the fact that they might perhaps have been avoided. In our private work we naturally have for varying periods of time, one or two thoroughly competent anesthetists whose skill and care reduce the element of danger to the minimum, but in a general hospital where the official anesthetist may be wanted in a half dozen different operating-rooms at the same moment, we are forced very often to depend upon the young interne who happens to be attached to our service at the time. I have done this, not occasionally, but habitually, and therefore in the course of these eight years my chloroform anesthesias have been conducted by a series of twenty-five or more inexperienced young men. In addition to this risk, I have assumed another—that of not withholding chloroform in a number of cases that presented cardiac valvular insufficiency. If in such cases there is an increased risk to be considered, it seemed to be entirely neutralized, or at least controlled, by a somewhat lighter anesthesia and a greater rapidity of operating. Finally, I have not limited the use of chloroform to children, but have employed it also in a considerable number of adults of both sexes.

I am quite aware that the mere statement that in all this time I have not met with a single accident, will not protect me from the criticism of those who have used and who know chloroform as well, or better than I do, and who have abandoned its use because of what have seemed to them good and sufficient reasons. Any opinion that is founded upon the results of personal experience, has its scientific value, but the opinion or the criticism that is merely academic, that is based upon a study of statistics and current literature rather than upon a personal and practical investigation of the matter that it concerns, although this sort of opinion may possess some abstract interest, it is wholly lacking in concrete, clinical value. And, therefore, I am venturing to give you my opinion of chloroform because it has at least the one merit of coming straight from the operating-room, and since I have frankly confided to you the several risks that I have taken, I think I may be permitted to tell you also the measures that I have taken to combat them. And these are connected with the patient, the anesthetic and the manner of its administration.

In the first place, the general condition of the patient, his aggregate vitality, has always been reckoned as closely as possible. Naturally there can be no arbitrary standard about a matter of this kind, but experience will usually enable one to make a sufficiently accurate estimate of the patient's physical strength to permit the making of a safe choice between two or more anesthetics. If, for instance, the patient shows in a marked degree what we ordinarily call "poor condition," if he is distinctly anemic or septic, or if he has been suffering from a long-continued, suppurative process such as would have rendered him a little more liable to what has been termed "delayed chloroform poisoning," then ether was always chosen. These several conditions had to be pronounced, however, to make me guilty of this infidelity to chloroform.

It is almost as unfortunate as it is remarkable that an article like chloroform which, for purposes of anesthesia, is presumed to be always of the same standard of chemical purity and physiological energy should display the inequalities that it does when produced by different makers. If we compare the results obtained from half a dozen different brands of chloroform, all the product of reputable manufacturing chemists, we will find that they may differ quite noticeably in the amount required for anesthesia, the rapidity with which this effect is produced, its duration, the degree of irritation that they severally occasion, and their effect upon the circulation and respiration. It was because of this variation that after some months of comparative tests I finally selected one brand and have employed it exculsively since that time. And since it is extremely important that a freshly-opened bottle be used for each private or for each series of dispensary patients, the convenience of having it marketed in one ounce containers is by no means an inconsiderable one. The rapidity with which chloroform deteriorates when once exposed to the air, is well known.

Finally, and probably most important, the method of administration claims attention. From the beginning I have used the "open method" and have carried it out with the Esmarch mask. Instead of stretching upon this, however, a single sheet of thick lint, as is advocated by several expert anesthetists, I have always employed ordinary surgical gauze and, according to the age, sex, and condition of the patient, I have used from four to six layers of this in the attempt to adapt to each case the proportionate admixture of air that he should have. Although a two per cent strength of chloroform vapor may answer very well as a general rule, yet I think that there are many cases in which we may either lessen or increase this strength with advantage. Of course, there can be no such thing as mathematical accuracy in this matter when the open method of administration is practiced, but it becomes in time fairly easy to approximate it with sufficient closeness. I follow the advice of almost all the authorities in starting the anesthetic very slowly and in not quickening it until the patient's breathing has become of normal rhythm and depth. Even then I do not permit it to be crowded for any reason whatever. If vomiting should seem imminent, the skin becoming pale and moist, the breathing shallow, and the pulse scarcely perceptible, instead of pushing the chloroform as is the custom with ether in the presence of this threatened interruption, it is at once suspended and I wait either for the stomach to be emptied or for the retching to subside; and it is not until the color, respiration and pulse have regained their normal state that the anesthesia is resumed. The depth to which this is carried naturally varies according to the probable duration of the operation. It is always deep enough to preclude any possible shock and yet not so deep that it will be unnecessarily prolonged beyond the conclusion of the operation. In fact, I am apt to be more pleased than disturbed if the patient gives noisy evidence of returning consciousness before I have quite finished.

This suggests, in passing, another advantage that chloroform possesses over ether, namely, that if the etherized patient comes out sufficiently to interrupt the progress of the operation, several minutes may be needed to get him under again, whereas, with chloroform a half dozen inspirations of the vapor will usually be sufficient to enable one to continue.

And now, I have only to add a few details of a general nature. It is almost self-evident that terror on the part of the child or any great apprehension on that of the adult patient will delay narcosis and increase the quantity of chloroform necessary to produce it. Moreover, unless particular care is observed, the screaming child with its exaggerated depth of inspiration is apt to carry a certain percentage of chloroform beyond the tidal into the residual air of its lungs, and unless the vapor is greatly attenuated by holding the mask at a distance from the face, the possibility of sudden toxemia may be dangerously increased. You are, no doubt, familiar with Henderson's views concerning the condition to which he has given the name acapnia. If, as he contends, carbon dioxid is the sole stimulus to the respiratory center, then it is easily conceivable that the excessive pulmonary ventilation associated with the struggles of an alarmed child may so reduce the carbon dioxid content of the blood that the possibility of apnea may become a probability. It is for these reasons, much more practical, you will admit, than sentimental, that I never grudge the several minutes sometimes required to allay a child's fear and quiet its cries.

In this connection it is of importance also to remember that the superior laryngeal nerve is, if you will pardon my using so venerable a figure of speech, the watch-dog of the lower air-tract, and that if this be subjected to such irritation as would proceed from too rich an anesthetic mixture, its powerful inhibitory action will be exerted not only upon the respiratory, but upon the cardiac centers as well. In explanation of my apparent rashness in using chloroform in cases of heart murmur due to valvular lesion, I need only state my belief that the valvular defect has very little contra-indicative significance if the myocardium itself is above pathologic reproach. If, however, there should be any evidence of degenerative change or lack of vigor on the part of that muscle, I hope you will need no assurance that I would not disregard the warning conveyed by these conditions.

Finally, to anticipate the question that I may be asked as to why I exposed my patients to the dangers associated with such a number of young and inexperienced anesthetists, I wish to say that I always make it clear to each new interne that it is I who assume the full responsibility of the chloroform anesthesia, and that therefore I do not expect his feelings to be wounded if I venture to utter an occasional suggestion or warning. At the beginning of his service with me each of them is shown exactly how I wish the anesthetic given, he is warned concerning every possible accident and is carefully instructed in the clinical signs that foretell the occurrence of each. And from then on the chloroform is not given solely by him or by me, but we give it together; it is an example of team-work, we both of us watch the patient's color and respiration, his finger is on the temporal and mine on the radial artery, and not only do our eyes watch the rhythm of breathing, but our ears listen to its smoothness and are intent upon catching any evidence of obstruction or irregularity. From time to time the pupil and other reflexes are tested, and until the last drop of chloroform has been given and the mask removed from the face, absolutely nothing is permitted to distract our attention from the patient's condition.

In conclusion, it must have become quite evident from all that I have said, that I think it much more prudent and infinitely easier to prevent accidents than to cope with them successfully should they occur. I do not believe that the cardiac failure and other more or less serious mishaps of chloroform anesthesia, however sudden they may seem, ever occur without both warning and provocation. In other words, I do not believe that there is anything treacherous in the toxic action of this anesthetic; but, if any man because of a few score or even a few hundred successful administrations of it is going to be lulled into a state of over-confidence and beguiled into the carelessness that is so commonly begotten of it, then it is he rather than chloroform that is to be held accountable for any unfortunate consequence. And I am perfectly willing that you should draw from this the very obvious inference that in my opinion many of the fatalities that have occurred under chloroform anesthesia have been attributable no more to the chloroform itself than to the carelessness or ignorance of those who have given it on those occasions.

In this connection and as a distinctly parallel case, I need scarcely recall to you the disfavor, the disrepute with which cocain was threatened during the first year or two following its introduction. Death after death, we shrink from any calculation of the actual number, was laid at the door of this immensely useful but very much abused drug. Idiosyncrasy, that favorite refuge of incompetency and recklessness, was dragged forward again and again to explain, or rather, to excuse these often inexcusable fatalities, just as for many years past the status lymphaticus has been made to serve as the scape-goat for numbers of deaths that have been really due to the incautious handling of chloroform and other anesthetics.

Unhappily, the therapeutic efficiency of many of our most useful drugs is very closely associated with, if not dependent upon their power as poisons, and it has often seemed rather singular to me that instead of being content with the safety that is afforded by an appropriate measure of caution in their administration, we are so apt to turn to synthetic chemistry in the search for a substitute that will have all of the virtues and none of the dangers of the original drug. However successful chemistry may have been in providing us with such make-shifts, for they are seldom more than that, I scarcely anticipate contradiction when I say that nothing can ever completely substitute care and common sense. Emphasizing, therefore, the essentiality of these and all that they imply, and insisting upon the freshness and purity of the drug, I say in closing, that my experience with chloroform up to this time leads me to ask for no pleasanter, safer nor more wholly satisfactory an anesthetic.

1435 Spruce Street.

Role of Emotion in Stuttering and Lisping. CHERVIN, *Semaine Med.*, Jan. 24, 1912.

Chervin recalls that both surgical and medicinal treatment of stuttering have long since been discarded and the only remedies lie in education and the increasing age of the subject. As to lisping, it is often complicated with a sort of deafness comparable to Daltonism in the eye, the subject confusing e. g.. k with t, sounds perfectly distinct to the normal ear. The education of subjects who lisp, be this from hereditary predisposition or some obscure organic defect, bristles with difficulties.—*Ex.*

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular Meeting, April 24, 1912.

JOHN F. McCOY, CHAIRMAN.

(Continued from page 1316.)

What has been entirely overlooked by the rhinologist in the consideration of orthodontia is the important forces of the muscular tissues contained within the oral cavity, and those surrounding it. It would be safe to say that those tissues do more orthodontia than all the appliances taken together. If we should trace the development of the maxilla, for instance, to the early embryonic stages, we will find that it is closely associated with the development of the tongue. Thus we will find the tongue bud is given off at about the third week of embryonic development, and when the palate processes are given off, at about the seventh week, the tongue fills the entire primitive oral cavity—the stomodeum—and lies at the base of the brain. And as the palate processes continue to develop, they creep, as it were, over the dorsum of the tongue, and so are shaped and molded by it. The tongue, therefore, at this early period exerts the greatest influence upon the form of the vault. As development goes on, the tongue is the most important organ in maintaining the form and shape of the oral cavity and of all the bony structures surrounding it, until the time of eruption and functionating of the teeth, when it is assisted by them in this capacity.

On the other hand, you have all observed the effect of the lack of function of this organ; you are all very well acquainted with the narrow upper dental arch in individuals afflicted with adenoids. In those individuals that have to resort to mouth-breathing, the tongue cannot perform its normal function, since the mouth must be kept open during respiration, the vault of the mouth immediately begins to lose its normal shape, while the mandible is invariably somewhat widened in the molar region from the pressure of the tongue which is compelled to rest on the floor of the mouth. Another phenomenon that you are well acquainted with in connection with adenoids is the protruding upper incisors. But if you will remember that, due to the existence of mouth-breathing also, the lips fail to functionate normally, then you will realize to what extent these muscles affect the shape of the jaw-bones.

Therefore, by gradual stimulation and consequent reshaping of these bones, as is followed by the best practitioners in orthodontia, and by establishing normal occlusion, i. e., the normal mechanical relation of the teeth, as taught by Angle, the muscles involved can be given an opportunity to adapt themselves to their new environment and assist further in maintaining the normally established conditions. Only thus can we hope for the successful accomplishment of all orthodontic treatment. While by rapid and forcible spreading of the upper dental arch, not only is the mechanical relation of the teeth disturbed, but a sudden condition is created for the muscular tissues which they are not prepared to cope with, and the final result, from an orthodontic standpoint, will be a failure.

Dr. Emil Mayer said that he would like to make a correction of the statement made by Dr. Corwin that he had never seen any reference in literature to the resiliency of the cartilaginous septum, and would like to call his attention to a paper entitled "A New Operation for the Relief of the Deviations of the Cartilaginous Septum," by Dr. Morris J. Asch, read before this academy.

Dr. Corwin thanked Dr. Mayer for the reference.

Dr. Haskin thanked the gentlemen for their interest in his paper, but regretted that the discussion had been so limited on the part of the rhinologists, and that Dr. Stanton should accuse him of a deliberate attempt to mislead anyone. Dr. Corwin's observation as to the resiliency of the cartilage when removed was most instructive, although it had probably not been noted except casually by most men. It shows conclusively that the cartilage is under constant tension in these cases. Dr. MacKee had seen these illustrations and said that the median sutures were open. Dr. Caldwell, even without seeing the plate, said that nothing else could possibly have occurred in these cases. It is well to realize that the illustrations only show the pre-maxillary suture. As for the work Dr. Staunton had done on the skull, the head was that of an adult negro and no one would expect to accomplish it.

Dr. Haskin said that he had three heads, aged 5, 8, and 20 years, under spreading apparatus, but they had been under operation for only four days and were not ready for demonstration. These heads would be shown in Philadelphia at the meeting of the Triological Society.

In regard to the question of expansion, he made no pretence to being an orthodontist. The question of whether the work is best accomplished by spring or by firm, strong screw-pressure, was one that was open to discussion, and if the men would stop and realize the point, and think about it themselves they could easily judge for themselves as to which is the more scientific. The models here show the spring and the screw methods. He had not presented his own opinions or ideas on the subject of rapid expansion. Drs. Hellman and Stanton seemed to think that the rapid separation could not be done. Dr. Haskin said that he had letters from men who have been doing this work for years, and the testimony of such men as Dr. N. M. Black and Dr. Brown of Milwaukee, Dr. Strong of Bridgeport, Dr. Bogue, of New York, Dr. Barnes of Cleveland and others who demonstrate that it can be done is surely worth consideration as they have been using this method for many years.

No man who studies bones long enough will question that if the alveolar processes are moved widely outward, the teeth must pull apart the walls of the nose and the walls of the antrum. In several skulls, he has separated the median suture with his thumbs, applying pressure against the alveolar processes.

As for the question of getting nasal relief with slow spring expansion, he does not believe in it. That is a purely personal feeling, for if one is going to move teeth to secure nasal width, and that is what is desired, the apices must be moved out. If you tilt the teeth, you will lessen the apical arch and thus lessen the nasal space, for the apices of the teeth will be forced inwards. You may get an enlarged coronal arch in this manner, but where the teeth apices have been formed, you will get a diminution of the nasal space, rather than an enlargement. Another question is as to the backward movement of the teeth. In the skull shown, if you attempt to use the first permanent molars as the anchors for the spring arch to force the teeth out, any attempt to move them that will force the molar back, even one millimeter, will cause still greater impaction of the second and third molars and will greatly increase the distress of the patient. The skull shows very clearly how the maxillae have failed to develop downwards and forwards and this failure has caused impactions of all four molars, the bicuspids and the lateral incisors. The following letters are evidences of what other men feel and as said before are surely worth considering.

Dr. Black writes that Dr. Brown has been doing rapid spreading for him for fourteen years and that the cases run up in the hundreds. He says that in every case the deflected septum has been straightened out when the patient was seen early enough, and had remained straight. This straightening did not take place when spurs had been thrown out, the spur apparently interfering with the resiliency of the cartilage. He is convinced that it is perfectly permissible to alter perfect occlusion in order to obtain greater width and increased breathing space.

Dr. Bogue writes me as follows: "You are quite right in your attitude as regards the influence of orthodontia upon the nasal passages. Frequently the spreading of the dental arches also corrects crooked nasal septa—especially if the spreading be quickly done and the teeth be moved bodily apart and not merely tipped, and if the septal crookedness be horizontal. I have had considerable experience along these lines, sometimes having as many as twenty or twenty-five cases at one time and I have come to look for nasal improvement now in all cases save those in which the force employed is so gentle as not to be perceptible excepting after some weeks of application. In all the cases of rapid spreading, especially where screw-pressure was used, I have yet to find the first case in which nasal improvement was not immediately perceptible to the patient. This statement refers to arches that were enlarged by moving the teeth bodily *en masse*, not by tipping them sideways individually."

Some Observations on the Treatment of Chronic Inflammation of the Nasal Accessory Sinuses. By C. G. Coakley, M. D.

DISCUSSION.

Dr. Harmon Smith said that he disliked to offer his few experiences in comparison with Dr. Coakley's as evidence of any positive conclusions, but that one was bound to be influenced more by his personal clinical experience than by the observations of others. In his clinic in the Manhattan Eye, Ear, and Throat Hospital, for a number of years, even when the reader of the paper advocated more ardently than now the external method of operation, the unwritten law of the clinic was that no external operation should be performed until all internal measures had proved unavailing and ample time and perseverance had been expended upon each case. The vast majority of these cases had all recovered under internal operation and treatment.

After the advent of the X-ray, it was possible to determine accurately the amount of space between the inner and outer plate, and he felt confident that the internal operation on the frontal sinus was one that could be safely performed by an operator having a thorough knowledge of the anatomy of this region. Curettage of the frontal sinus or of the tract leading to it was a mistake; the membrane was often destroyed and a periosteitis followed, which presented the beneficial results that are obtained by clean cuts.

He also disagreed with Dr. Coakley in regard to the internal injection of such substances as chlorid of zinc, lactic acid bacilli, enzymol and argyrol. One has to try out various medicaments, and where one of these does not succeed, frequently another will. He himself had tried lactic acid with poor results where enzymol would be productive of good ones. The secret of success, however, was frequent operation, and not doing too much at one time.

In his opinion, a good clean cut in this region was far preferable to using rasps or any of the curettes that were advocated. The curetting of the polypi from the antrum does not facilitate the healing process, for the pyogenic membrane remaining will create more granulations, and the mucous membrane has been destroyed where it is necessary to protect the bone. Ventilation and drainage are the two essentials to the curing of these cases; he prefers to douch these cases, and uses the Douglass douche. Bier's suction method is also a good method of treatment, if one does not employ too much force. If sufficient force is exercised to create a hemorrhage, the method is detrimental, but if only sufficient be employed to draw out the pus, very good results could be obtained if used in conjunction with other methods of treatment.

Dr. Haskin said that Dr. Smith's last remark had interested him very much, inasmuch as for years he himself had not operated on the nose intra-nasally for the treatment of acute inflammation of the ethmoids or other sinuses, having used suction with the vacuum-pump entirely. He had had several cases within the past few weeks—frontal sinuses, ethmoids, and sphenoids—all treated in this way. By using a silver catheter bent to suit the case and applying the vacuum-pump or suction-method one could obtain results that no blowing or spraying would produce. He had often employed Douglass' douche in the office, and afterwards there would still be secretions under the turbinate bodies, but by applying the catheter and suction one could draw out long strings of mucus and pus and the patient would be almost immediately relieved. There was a drying and shrinking of the processes and applications could be made directly. He generally uses a twenty-five per cent solution of argyrol. The suction-method was the most sanitary method of cleaning out the sinuses and the least distressing to the patient. In many instances it could be used without cocainizing the region. As soon as the mucus was removed the mucous membrane would shrink down and give a large nasal space so that one could see the conditions in the nose. Of course, polypoid conditions were different, and would have to be operated upon.

Dr. Abraham complimented Dr. Coakley on his most interesting and instructive paper, and was pleased that the doctor had come back to the conservative operators among whom he counted himself. His first patient was operated on in the fall of 1897. Nearly every operation for chronic empyema of the antrum and frontal sinus was performed externally. These cases required not weeks but months to heal, some even running along for a year, or possibly longer, some passed out of his hands and no doubt were treated by some of you present. A few years later it occurred to him that intra-nasal surgery would answer in many of these cases, especially in cases of the antrum, and in 1899 he began intra-nasal work on chronic cases of the antrum, and since then has not performed a radical operation on the antrum. In his cases, last summer, the average duration of treatment was only three weeks. Some of these cases had been under treatment for years and some had been operated upon previously. He thoroughly agreed with the statement that in some of these cases the opening healed up quickly. He was now so conservative that he merely removed the lower border of the inferior turbinated bone to a sufficient degree to see the inferior meatus and not the entire anterior one-third of the inferior turbinate.

Speaking again of his private cases, he does not allow any of his patients to wash out the antrum, but does it himself, once a day. At the time of operation he curettes mildly all the exuberant granulation-tissue and polypoid masses, and depends on weak solutions of silver nitrate, perhaps as high as ten per cent, and in four to six weeks all of the cases are cured. In the acute cases simple opening and drainage is usually sufficient. He also agreed with Dr. Coakley's statement that the injection of antiseptics for diagnostic purposes should be discarded. This is especially true of hydrogen peroxid.

As for the ethmoids he does not operate upon them externally, as he had not seen a case demanding it. The great majority of these cases can be cured if the ethmoid is simply diseased, without involvement of the sphenoid and frontal. They may require from one to six operations to completely remove all diseased tissue.

He had under observation three cases of chronic frontal sinus empyema, of two or three years' duration, operated upon intra-nasally during the past year. These cases will run along for several weeks or months perfectly well until they contract a severe acute rhinitis; re-infection follows with purulent discharge, but under a few treatments they will clear up. In one case he has advised a radical Killian operation as he does not think the case will ever get well from the intra-nasal operation He believes in giving the patients the benefit of the doubt and prefers first intra-nasal operation and drainage. If after a given length of time the case fails to improve, then he performs a Killian operation.

Removal of the anterior wall of the sphenoidal sinus followed by local application, especially of nitrate of silver solution would heal the majority of these cases.

Dr. Emil Mayer expressed his pleasure at noting the swing of the pendulum to what may be believed to be the saner, safer, slower, and perhaps the more sure methods of intra-nasal operation, for the vast majority of these cases. It was a source of gratification to know that even so confirmed an external operator as Hajek was now inclining to what most of us have been hoping and preaching. Let us not forget, however, that there are occasions when the external operation has to be performed, that we sometimes have to deal with marked anomalies, and each case has to be studied from its own standpoint. One young man came to Mt. Sinai Hospital suffering from severe headaches and great rise of temperature every afternoon. A diagnosis of frontal sinusitis had been made before he came in, and this diagnosis was promptly and easily verified, except that there was no evidence of any pus on that side of the nose where he had the headaches. On the opposite side of the nose, however, there was a very large cystic turbinate, and he questioned as to whether or not it was best to submit the patient to an intra-nasal operation. Bearing in mind the experience of Killian and others who particularly caution against an intra-nasal operation if there is reason to believe that within a reasonable length of time you may be compelled to do a radical operation; he finally decided against the intra-nasal method and operated externally. He was very glad indeed that he had so decided when he found a frontal sinus extending almost to the edge of the eyebrow, running over to the oposite side. A remarkable feature of the case was that the frontal sinus was filled with a gelatinous mass, but no pus. A number of streptococci were found in the mass. A case of this kind was quite apropos in considering the subject before us, and Dr. Coakley would doubtless admit that such things should be thought of in deciding what kind of operation should be done. If he had attempted in this case to remove the middle turbinate, the patient would certainly have been put in a condition in which he was liable to be reinfected.

He wished to emphasize his gratification that these intra-nasal operations had been shown again to be so lasting and so satisfactory.

Dr. Yankauer said that the question of intra-nasal operation on the antrum had been settled some years before. When we first began to do the more radical intra-nasal operation, we had a number of cases which had been operated through the mouth and they continued to discharge for a long while, but this was controlled after the antrum was opened intra-nasally. Dr. Coakley mentioned that the nasal wall of the antrum has a tendency to close. He also had noted this, but had found a method which usually overcame that tendency. The closure of the nasal wall is due to the fact that the opening is not high enough, so that the natural orifice of the antrum is left intact. If you look at the natural orifice from the antrum side, the drainage of the secretions from the interior of the antrum takes place toward the natural orifice, the cilia of the epithelium move toward the natural orifice. If any of the inner wall is left, the tendency will be for the secretion to come out through the natural orifice and not through the artificial opening. If, however, the artificial opening is carried upwards and backwards, so as to include the natural orifice, this drainage is destroyed, and under these circumstances the secretion must escape from the artificial opening, and it remains patent. It is not necessary to have the artificial opening level with the floor of the nose. It sometimes happens that the floor of the antrum is on a lower level than the nasal floor. In order to destroy the antral drainage, it is necessary to remove the anterior end of the lower turbinate, and he had always done so, but it is not necessary to remove the turbinate as far back as the antral orifice. But if the anterior third is removed and the opening continued upward into the middle meatus, the opening will remain patent.

In speaking of the opening of the cells, Dr. Coakley had spoken of exenteration. Dr. Yankauer said that he did not know what Dr. Coakley's practice was, but he wished to protest against the use of the curette in the ethmoidal region. It was not only dangerous but it was useless. If it were possible to remove all the mucous membrane so as to leave the os planum bare, the bone would never be covered with epithelium. It would granulate and form polypi. It was his practice in removing the ethmoidal cells to remove their inner walls, and to cut away the septa, using cutting forceps, being careful that they are sharp so as to cut through the mucous membrane without tearing. If that is done, and the mucous membrane of the outer wall of the cells is left in place, there is only a small area of bone to heal over, and a considerable amount of mucous membrane is left, which afterward assumes the function of the nasal mucosa. Some years ago he had devised an instrument for the removal of the anterior half of the naso-frontal duct, leaving the mucous membrane of the posterior half in situ. He had treated a number of cases with moderate success, but a large frontal sinus filled with polypi cannot be cured by the intra-nasal method.

Dr. Hurd said that he agreed with Dr. Coakley's paper in every respect. Last June he had read a paper on this same subject, which expressed practically the same views. One point, however, that he had brought out was that the polypoid varieties were not as a rule suitable cases. Much cannot be done for that condition through the nose. They will reproduce this inflammatory polypoid tissue, and a good many of them will have to be opened externally. Eight or nine years ago there were two schools, the radicals and the conservatives. The conservatives have trailed along, and some of the radical men have stated their views more clearly. The treatment of private patients is different from that of clinical patients. The latter want a quick cure, whereas the private patients will stand more manipulations and give more time to a cure, and one of the ideal features of private practice is the cure of an antrum without doing more than washing out with saline solution. He has had a number of cases that were cured without any operation—simply by cleaning them out thoroughly every day with saline solution. Bismuth paste is an aid in some of the sinuses, especially the sphenoid. He employs suction a great deal, not as a cure but as an aid; and after cleaning the pockets out as thoroughly as possible, he uses the bismuth paste, and has cured a number of sphenoid cases in that way. Another agent which he uses is nitrate of silver in strong solution, eight to ten per cent, going as high as fifty per cent. If that does not relieve after an interval of some weeks, he uses a saturated solution of nitrate of silver. He has under observation a case which had been discharging indefinitely. Two months ago he performed a submucous operation, and washed out the antrum through the intra-nasal orifice. The man has two orifices, an upper and a lower. The cavity was washed out with a saline solution, four per cent, and a ten per cent solution of nitrate of silver some days after, using 260 grains to the ounce; this not proving efficacious, a saturated solution was used. Two weeks ago he returned with a dry nose.

Dr. Coakley was speaking about chronic sinuses, not acute ones. In a case now under observation, the patient had the sinuses on both sides filled with this productive inflammation, and they had been cleaned out by several men for two years. He did a double radical and she broke down with pus all through. There was a perfect bath of purulent secretion all over the nose, and no matter what he used the productive inflammation of the mucous membrane recurred. Then he gave her vaccines, using a stock vaccine, and after fifteen doses the pus had disappeared. The wound had broken down twice, but seemingly was now healed.

Dr. Cocks said that he would like to speak for a moment of the bad cases of chronic antral suppuration where the antrum is completely filled with polypoid material and pus. In these cases, he believes a cure cannot be attained by the intra-nasal operation. On the other hand, the old method of operating by the canine fossa route, removing the anterior bony antral wall, and packing the cavity to make it heal from the bottom by granulation, involves so much discomfort to the patient and healing occupies such a long period, that this operation has been discarded by most operators. Dr. Cocks said he preferred the Caldwell-Luc operation, which gives a good exposure of the antral cavity. It is his custom, when performing this operation, to make a large opening into the nose from the nasal floor to the natural opening of the sinus. At the same time a large portion of the inferior turbinate is removed. When the operation is concluded, the labio-gingival incision is sutured. No packing is required. If a sufficiently wide nasal opening be made, no difficulty is encountered with after-treatment. For cases of extensive polypoidal disease of the lining mucosa of the antrum, this operation seems a more surgical procedure than the intra-nasal method.

Dr. Douglass said that Dr. Coakley's paper contained the last word of our present knowledge of sinus conditions. He voiced the experience of the best operators, particularly in that strong sentence in which he said that the only method to be relied upon for a cure of chronic suppuration of the sinuses was surgery. If he were to add two words to that, they would be, "and drainage." There is only one method to be relied upon for the proper cure of nasal sinusitis, and that method is surgery and drainage. This branch of our art is shifting faster than any other, and what is true to-day is untrue to-morrow. We pray and hope that the truths of to-day will be the untruths of to-morrow, for there is no branch of our work that is so unsatisfactory as this sinus work. It was well enough to claim sure cures for sinus surgery but one never knows when they are really cured, for relapses are frequently treated by a change of surgeons and the sinus cases, especially the clinic ones, drift about from hospital to hospital. From his own experience and that of his associates, he feels that it is better not to do operations on the frontal sinus if one can get drainage without operation, but *drainage is imperative.* When operation is necessary, the best results are obtained by the radical operation. If the sinus is small, an external operation does no harm, and if it is large, an internal operation does no good. It is well enough to be careful of the appearance of the patient, but the first thing is his welfare.

As for the antrum operation, he was usually satisfied with the intranasal method in private practice, but in hospital practice it had better not be done. Of course, there are exceptions to that, but the cases do not get along so well in the clinics. The radical operation of Luc is best.

The ethmoids and sphenoids had always been his betes noires, and still are. He would be very grateful to any one who would tell him how to treat them successfully. When he does the radical operation he is troubled forever by scabs, and if he does not do the radical operation he is troubled with discharge. He never knows which to choose, so far as the patient is concerned. The cases which give the least satisfactory results are those on the sphenoid and ethmoid, excepting of course cases of perforation and sepsis, where operation is a matter of life-saving. These views of Dr. Coakley are sound, and they should be applied, and all should try to work up to the standard which Dr. Coakley had set, but we must get past that to something still better than anything we have now, before we find anything that is really satisfactory.

Dr. Seymour Oppenheimer said that while it was true that the radiograph shows the relation which the ethmoidal tract bears to the other portions of the skull which concern us as rhinologists, yet it does not give the accurate information which is necessary to pre-determine whether a group of ethmoid cells are going to drain or not, after endo nasal measures have been tried. In several cases where he had employed endo-nasal surgery in cases where there were supra-orbital recesses (referring to cases that had been seen over a number of years, so that there is no question as to the facts) he was satisfied that much can be done occasionally even in some of these cases which according to the radiographic determination of the anatomical position of the cellular groupings, speak for external operation without subjecting the patient to an external radical procedure. The question as to whether endo-nasal methods or external ones should be employed is oft-times decided individually, for I think we all set our own indications, some more radically than others. The great trouble is that many men start off with radical views and soon become radical enthusiasts, and, seeing things from their own view-point the indications for radical surgery are in the majority of their cases present. The question which I ask myself, barring those cases where definite evidences exist for the performance of the external operation (referring to the frontal sinus), is are the results always more satisfactory than by endo-nasal methods? Certain it is I have seen a number of cases that have been operated by the most skilled and competent surgeons, in which there has not been a cessation of nasal suppuration in spite of what was considered very thorough radical surgery.

Dr. McCoy said that his own views coincided with those of Dr. Coakley and he only wished to accentuate a few of them. Dr. Coakley had said that it was a delusion and a snare to operate on the frontal sinus and not touch the ethmoid cells. One of his own cases of brain-abscess which resulted in a cure was due to an attempt by another surgeon to treat the frontal sinus in this way which was followed by granulations filling up the naso-frontal duct, impaired drainage, and epidural abscess and brain abscess. That was due to the fact that the ethmoid was not touched by the method of treating the frontal sinus. He would like to know what was Dr. Coakley's experience in atrophic rhinitis operated by the external method. He agreed with Dr. Yankauer in what he had said about the antrum operation but did not coincide with his reasoning and had himself been getting better results when doing intra-nasal work on the antrum by going up to the normal orifice. He had succeeded in curing all his cases since adopting that feature.

Dr. Abraham said that Dr. Douglass seemed to think that he had made the claim that none of his cases were under treatment for more than three weeks, and then fell in the hands of other operators, whereas he had said distinctly that in the early part of his practice they were under treatment for weeks, months or perhaps several years—some of them got out of his hands after several years of treatment without cure. He had said, however, that during May, June, and July of last year he had treated eight cases of chronic empyema of the antrum and the average duration was three weeks of treatment, and though they have been under observation ever since not one has had a recurrence, a statement which he is ready to prove. Three had attacks of acute rhinitis since their operation without a recurrence of the empyema.

Report on a Case of Nasal Diphtheria. N. A. Christie, *Can. Prac. and Rev.*, Jan., 1912.

This is the report of a case of diphtheria in a lad of 17 years, where the usual throat condition was accentuated, and complicated by a cellulitis about the angle of the right jaw which pushed it forward to such an extent that the upper and lower sets of teeth were not in line. On the seventh day, when the pharyngeal membrane was loosening, a complete membranous cast was expelled from the right nostril followed by a profuse hemorrhage, which necessitated plugging. Subsequently pharyngeal paralysis, diplopia, numbness of the arms and legs, regurgitation of all food, etc., developed. Convalescence occupied four months. Wishart.

BOOK REVIEWS.

Handbuch der speciellen Chirurgie des Ohres und der oberen Luftwege. Edited by Drs. L. Katz, H. Preysing, and F. Blumenfeld. Band 1, Heft 2, Lieferung 1; price, M. 6; Band 1, Heft 2, Lieferung 1; price, M. 6. Curt Kabitzsch, Wuerzburg, 1911.

The second half of volume 11 of this exhaustive treatise on the special surgery of the ear and upper respiratory tract is before us and contains: (a) Mechanical bloodless treatment of stenosis of the upper respiratory tract, by Pieniazek of Krakau; (b) Cosmetic operations including: Prothesis, by Dr. G. Port of Heidelberg; Corrective operations, by Dr. Jacques Joseph of Berlin; Paraffin therapy, by Dr. Albert Stein of Wiesbaden; Plastic operations, by Dr. Ph. Bockenheimer of Berlin; (c) Roentgen diagnosis in oto-rhinology, by Dr. A. Kuttner of Berlin; (d) Phlegmonous inflammations of the upper air tract, by Dr. Edmund Meyer of Berlin; (e) General and special treatment of septic disease, by Dr. Kissling of Hamburg.

A. *The treatment of stenosis* is minutely recorded by Prof. Pieniazek, one of the pioneers in laryngoscope and bronchoscopy, whose research-work in this new field entitles this chapter to careful reading and special recognition.

He discusses the disposal of stenoses of the nose, especially those resulting from cicatricial contraction after ulceration and inflammation, as induced by syphilis, scleroma, congenital deformities; stenoses of the naso-pharynx; stenoses of the larynx and trachea and of the bronchi by bougies and other dilatation instruments through the bronchus; intubation and its various modifications of technic; stenosis of the larynx following tracheotomy and the various technical means of increasing the lumen of the trachea; tracheal fistulae and methods of dilatation through such artificial openings; the operative treatment of laryngeal stenosis after tracheotomy; and all the other types of contraction and alteration in the lumen of the respiratory tubes, both operative and mechanically non-operative.

Prosthesis of the defects in the region of the face and jaw that are not included in the more difficult plastic surgery, by means of the application of various mechanical devices and apparatus are considered by Prof. Dr. Port. Congenital and acquired defects of the palate and pharynx, cleft palate, replacement of sections of the tongue, artificial noses, replacement of lips and of cheek, artificial ears by means of plates, metal molds, obliterators and metal casts are presented in a most interesting, practical and minute form. There is more information in this monograph on prothesis of these areas than we have found in any text-book on special surgery.

B. *Corrective nasal and ear surgery, by Dr. Jacques Joseph.* Joseph classifies the deformities of the nose as follows: I. Hypertrophy of the nose (rhinomegaly). 1. Hypertrophy of the bony nose, either an abnormally convex profile or an abnormal breadth of the bony portion. 2. Hypertrophy of the cartilaginous nose: a. abnormal arching of the triangular cartilage; b. abnormal length of the nose due either to a hanging septum or to excessive length of the entire nose; c. various deformities of the wings of the nose; d. deformities of the tip of the nose. The crooked or oblique nose. Nasal defects.

This monograph by Joseph is one of the most complete in the entire series in this handbook; for he presents for the first time many of the original and ingenious plastic operations devised by this skillful technician. Joseph made an extensive study of this particular field of plastic surgery. Most of these operations were performed intra-nasally and bring into practical application all of the most approved principles of cosmetic and plastic surgery.

It is the first complete exposition of this delicate field of plastic surgery that has ever been presented in which the author clearly describes every detail of technic, the instruments and mechanical devices that have been constructed for this purpose, and many little "tricks" and "wrinkles" which previous authors have selfishly withheld from publication.

We take this occasion to congratulate our able confrere for his ingenuity, liberality and originality.

C. *Paraffin therapy, by Dr. Albert Stein.* Dr. Stein goes extensively into the question of paraffin prothesis in its application to the nose and ear.

D. *Plastic operations, by Dr. Ph. Bockheimer.* The author divides plastic operation on the face into: (a) autoplasty; (b) heteroplasty, and (c) alloplasty. This field is uncommonly diversified and the operative technic and methods employed are considered from every view-point. In the temporal, the cheek, on the eyelid, nose, ear, lip, mouth, hard and
the temporal, the cheek, on the eyelid, nose, ear, lip, mouth, hard and
soft palates, uranoplasty and staphylorrhaphy are given.

Hare-lip and Cleft-palate. With Special Reference to the Operative Treatment and its Results.

By James Berry, B. S., and T. Percy Legg, M. S. London. Pp. 341, with 242 illustrations. Price, $4.00. Philadelphia: P. Blakiston's Sons & Co., 1912.

The most important feature in an extensive surgical monograph is original work, and the volume before us presents the experiences of Mr. James Berry and Mr. T. Percy Legg, in a series of 154 consecutive cases of cleft-palate operation from 1894 to the end of 1911.

In this book is described in full detail the methods which have been found most useful in the treatment of hare-lip and cleft-palate. The authors prefer to operate on the hare-lip first and to complete the correction of the cleft in the palate when the child is older. Originality in operative technic, sound and good judgment in the selection of the time and condition of the operation, clear and terse description in the text and a series of remarkably well-executed drawings to illustrate the different steps of the operation, great variety in the hare-lips and cleft-palate described, and technical points developed by the authors characterize every page of this volume.

In addition to a truthful record of their own work, the authors present a consideration of other methods introduced for the correction of cleft-palate and hare-lip, by Brophy, Lane, and others, and have also added chapters on the embryology, anatomy and physiology of the lips and palate, the variations of hare-lip and cleft-palate, the training in articulation after the operation, and a valuable appendix of 154 cases of cleft-palate with a brief resumé of each case.

The illustrations and press-work are unusually fine, and the entire volume presents the best treatise on hare-lip and cleft-palate as yet published.

On the Physiology of the Semi-circular Canals and Their Relation to Seasickness.

By Joseph Byrne, A. M., M. D., LL. B. First edition; Octavo; 569 pages. Price, $3.00. New York; J. T. Dougherty, 1912.

The author presents in this volume of 570 pages, six years of experience and observation on the etiology of sea-sickness and the relation of sea-sickness to this long-mooted question. The experiments on which these observations are based consisted in a series of attempts to stimulate sea-sickness by rotation, aural irrigation, light stimulation, galvanism applied to the mastoid region, etc. It also includes a careful observation of the effect of sea-voyage on the author and several selected subjects.

The remarkable development made in the past few years in the study of the physiology and pathology of the labyrinth justifies some of the conclusions reached by the author in his assertion of the semi-circular canals as the causative factor in sea-sickness.

The author claims that his investigation of the phenomenon of nystagmus as produced mechanically, thermically and electrically was studied and worked out by him independently, before he had any information of the work done by Bárány, Neumann and others.

These studies in sea-sickness, and the deductions and conclusions which are reached are very interesting. The gyroscope is a possible means of preventing sea-sickness, if the principle of the gyroscope can be applied in conjunction with the swinging deck or compartment.

While no definite conclusions of practical value are reached in this investigation, there are, however, many avenues of thought and material for further experiment offered.

Practical Medical Series Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Volume III, The Eye, Ear, Nose and Throat.

Edited by A. Wood, M. C., Albert H. Andrews, M. D., and Gustav P. Head, M. D. The Year Book Publishers, Chicago, 1912.

We are always glad to see this annual visitor, for it presents in crystalized form the most recent developments in ophthalmology and otolaryngology, including anatomy, surgery, technic, new therapy and advanced thought in our literature.

For the busy specialist who neglects to read the progress in his field from month to month in the special medical journals, this little yearbook should prove an invaluable companion, and afford a means for further reference and an index as to where more detailed information may be obtained.

Primary Malignant Growths of the Lungs and Bronchi—A Pathological and Clinical Study.

By I. Adler, A. M., M. D. Pp. 325, with 16 plates. Price 16s net. London: Longmans, Green & Co., 1912.

The field which this volume presents is a rather new one in special literature.

The monograph was originally intended as a contribution to Prof. Arnold in honor of the seventieth birthday of this master in pathology.

Prof. Adler believes that these primary malignant tumors, while, infrequent, are by no means extremely rare.

Not only carcinoma, but also other mailgnant tumors of the lung are considered both from the broad pathological as well as from the clinical point of view.

A very large material has been collected from the literature in this field towards this accomplishment. In 1896, Passler managed to collect about seventy-four cases of undoubted primary carcinoma of the lungs. Edward Boecker, in 1910, remarked that 100 cases can now be found in the literature.

It is a very laborious and serious literary undertaking to collect such matter and to eliminate that which adds but little of statistic or scientific value. The author has been successful in this difficult task and has presented, both in analytical and tabular form, a series of 374 cases of primary carcinoma of the lungs, 90 cases of sarcoma, 99 cases of malignancy of the pulmonary organs of doubtful character, and 18 miscellaneous cases of probable malignancy.

The pathological and clinical chapters are splendid examples of careful analysis, sound pathological knowledge and lucid deductions. This monograph cannot fail to be a matter of much profit and information to all who carefully peruse it.

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THE MODERN HISTORY OF ACCESSORY NASAL SINUS DISEASE.*

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The period of my activities in laryngology covering as it does more than twenty-five years includes in its experiences the rise of interest in and the eager cultivation of our modern knowledge of diseases of the accessory sinuses of the nose. It witnessed the absurd exaggerations of notions as to the frequency with which sinus disease requires surgical intervention, the rash resort to devastating destruction of nasal structure in operative measures designed to afford relief to affections more or less trifling in themselves. It experienced the disasters, "the doctor's mistakes which the earth covers," the disappointments of too enthusiastic operators and too credulous patients. It saw reputations, world wide in the narrow domain of our specialty made out of a manual dexterity perhaps, but also out of an intrepidity of spirit which often encroached too much upon the rights of humanity and too often disregarded the precepts of conscientious professional conduct. It saw on the other hand the unselfish pursuit of knowledge, the single minded endeavor to spread its beneficent influence and make it a heritage of future medical men. A period of twenty-five years had seen this slow and modest toil rewarded by the fruition of a more rational way of looking on sinus disease as usually a minor evil with which the system is often able to cope unaided or assisted only by moderate and comparatively harmless intervention. It has seen effective relief rendered in those dangerous cases of suppurative and neoplastic disease which pursued their course unchecked to a fatal issue a generation ago.

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*This article forms a part of the new matter to be included in the second edition of Dr. Wright's History of Laryngology, to be issued shortly by Lea & Febiger, the matter of the first edition having appeared in these columns. —The Editor.

There is doubtless still much to be learned, many improvements still to be made, much enlightenment still to be gained in the study of sinus disease, but it is safe to say that the prefatory stage to the sober scientific investigation of it has passed by.

There can be no doubt that the material causes of the activities in this field of medical science had their foundations in that development of mechanical and technical art which produced the laryngoscope and the illumination of hidden recesses of the body by means of intensified gas light, electric incandescence and the mysterious powers of the actinic rays produced by atonic disintegration. Still more far-reaching in its effects was the intellectual expansion which resulted in the extension of anatomical study, both gross and microscopic, to the bony tissues and their softer linings in the nose and the adnexa.

It is unsafe to prophesy, but it seems very probable, that further advance is to be made in the future along physiological lines which must include investigations in the micro-biology and the metabolism of the nasal mucosa and its ramifications in the sinuses and to this there must be allied the consideration of the relationship which this special micro-biology and special metabolism bears to like phenomena in the general system.

We have seen how completely and exhaustively the subject of the surgical treatment of the antrum of Highmore has been dealt with in literature, largely before the nineteenth century.

After the beginning of the development of modern rhinology in the early eighties, interest was gradually aroused in the subject of accessory sinus disease. In the discussion at the meeting of the German Naturalists in 1886, the idea, traces of which we have seen in earlier literature, again arose as to the connection between sinus disease and ozenatous atrophic rhinitis. The etiology of maxillary sinus disease in the vast majority of the cases was at this time ascribed to carious teeth. Among those who accepted this view were Killian,[1] Schmiegelow,[2] and MacBride.[3]

Mikulicz[4] brought into vogue his operation of perforating the maxillary sinus with a trocar and canula from the nasal chambers, but the perforation through the alveolus still remained the more common procedure as long as the teeth were accepted as the chief factors in the etiology of suppuration.

Interest was soon aroused in America and Dr. J. H. Bryan in 1889 read a paper before the American Medical Association on the subject. Considerable had been said as to the difficulty in diagnosticating the presence of pus in the maxillary sinus and the trocar of Krause was devised for exploratory puncture, irrigation and the insufflation of iodoform and other powders.[5]

Transillumination: Another method of diagnosis attracted much more attention. Dr. Theodor Heryng[6] in 1889 urged the idea of Voltolini,—the electric transillumination of the antrum. MacBride and Vohsen both read papers on this subject at the International Congress in 1889. Even as early as this, in the discussion of Vohsen's paper Freudenthal and Heymann pointed out that transillumination is not by any means a reliable method by itself for diagnosis of sinus disease and in spite of the considerable vogue the procedure has had in rhinology this remains, twenty-five years later, the prevailing sentiment.

Latent Suppuration: Lichtwitz[7] and Jeanty[8] described cases of latent suppuration of the antrum of Highmore, pointing out that it was frequently bilateral. Writers became more cautious and critical as to the results of the treatment then in vogue, chiefly drainage through an alveolar perforation. Many cases of antrum disease alone failed to respond to this treatment, while the fact that the upper row of sinuses was furnishing the pus and the antrum was but a reservoir for it was still unknown or unappreciated.

Necrosing Ethmoiditis: As to the ethmoid cells, in 1887, Woakes[9] drew attention to a cleavage of the middle turbinated bone which he declared to be due to necrosing ethmoiditis. Although it has subsequently been shown that this apparent cleavage of the bone is often really a presentation of a polyp from beneath it, having its attachment to the hiatus semilunaris or its neighborhood, this work of Woakes created great interest in the pathological states of the ethmoidal labyrinth and led to the liveliest discussions for several years. Bosworth[10] in 1891 wrote on the various forms of disease of the ethmoid cells. Gruenwald[11] in 1892 published his well-known brochure on nasal suppurations, special attention being drawn to the affections of the ethmoid and sphenoid cavities. Although there were a number of other articles on disease of the cavities at this time, these three contributions to the subject in England, America and Germany formed perhaps the greatest stimulus to the flood of literature of the subject which followed. Gruenwald's radical views as to occurrence, complications and treatment, Woakes' views as to the connection of ethmoiditis and nasal polypi, and still more the views of Bosworth as to ethmoiditis and the etiology of asthma and hay-fever furnished themes for animated attack and defense.

Frontal Sinus: Schaeffer[11] in 1890 had proposed to drain the frontal sinus by enlarging its communication through the infundibulum with the middle meatus. In 1891 Baumgarten,[13] Montaz,[14] Silcock,[15] Gruenwald[16] and others wrote papers on frontal sinus disease most of them counselling the trephining of the sinus externally. Among the ophthalmologists, disease of the frontal sinuses and ethmoidal cells had for a long time been known as the origin of orbital abscess[17] and many operations were performed by them in which these cavities were reached from an incision at the inner and upper angle of the orbit. Brain abscess having its origin in suppuration of the frontal sinuses was noted in 1892.[18] Lichtwitz[19] in 1893 again urged the practicability of reaching the frontal sinus through the nose, by means of probe and canula. For years this idea was discredited as dangerous and even impossible in the majority of cases by many writers.

Woakes had claimed ethmoiditis as the chief factor in the etiology of nasal polypi and Gruenwald had traced that of ozena to affections of the accessory sinuses, an idea which is still more or less prevalent among a minority of rhinologists. Among others Chiari[20] soon opposed these views, referring to 128 cases of atrophic rhinitis with ozena without sinus disease and sixty-one cases of nasal polypi without caries of the ethmoid cells. These matters, as many others which engaged the attention of clinical observers in rhinology could not be intelligently discussed without a more accurate knowledge of the anatomical relations and post-mortem conditions of the accessory sinuses.

Post-mortem Examinations: In 1877 Schalle[21] had described a method of examining these cavities in the cadaver without disfiguration. This had been the great drawback to a thorough understanding of anatomical and pathological points of interest and importance and consequently a decided hindrance to clinical activity. Since 1882 the invaluable work of Zuckerkandl[22] subsequently much enlarged, had been almost the sole guide of surgical procedure as it was subsequently the inspiration of much work in the anatomy and pathology of these regions. In 1891 Harke[23] referring to the work of Schalle, introduced an improvement in the post-mortem technic of the examination of the nasal chambers and the sinuses. Subsequently in 1895-96 Harke,[24] Dmochowski[25] and E. Fraenkel,[26] did a great deal to extend our knowledge of the anatomy, pathology and bacteriology of the nasal accessory cavities.

The discovery, made post-mortem, that such a large proportion of cases show evidence of latent disease of or purulent collections in the antrum of Highmore did much not only to establish this point, but did much also to show that patients may carry around with them for years foci of pus in the cavities of the nose without inconvenience or danger. The prevalence of epidemics of influenza throughout the civilized world during the period of growing interest in these conditions stimulated the study of them, as it gave rise to the opportunity for it. It was early recognized that this affection was the cause of the occurrence of many acute attacks and that these became the starting points of much subsequent chronic disease. While these opportunities for clinical study doubtless bore an important part in the causes which underlay the study of sinus disease, it could not have been carried to the fruition of the present day status of our knowledge, but for the continuation of the pursuit of the fundamental embryological; anatomical and pathological facts brought out in the works of Sieur and Jacobs, Killian, Onodi and others.

Von Besser[27] in 1889, had shown the presence of pyogenic organisms in the normal maxillary antrum. Dmochowski in 1895, showed that in nearly 20 per cent of post-mortem examinations of cases, dead of various diseases, there was a pathological state of the mucosa of the maxillary antrum. Like results were also obtained by Eugen Fraenkel in post-mortem examinations of a large number of cases about the same time. For many years these were the only investigations of importance which were published on the flora of the accessory sinuses.

In 1910 Turner and Lewis[28] published important papers on their bacteriology in which they showed the dominant organisms were not constant, but that pneumococci, streptococci, staphylococci, bacteriae coli, diphtheriae, influenzae were all found in various cases.

They emphasized a point, which had been occasionally mentioned by others, that when the purulent matter contained a large number of lymphocytes and when the prevailing organism was a streptococcus the chronic cases were apt to be rebellious to treatment and simple douching does not suffice. When these conditions did not prevail simple douching was often sufficient. They placed the figure of proportionate frequency of the dental factor in maxillary sinus suppuration at one third of the cases. Sobernheim,[29] in 1910, also made observations on the bacterial flora in chronic empyema of the maxillary sinus in which he came to somewhat analogous conclusions as did Turner, but found in some cases that the pus was sterile—in seven out of the twenty-five cases examined. This certainly is a surprisingly large number of negative results and conclusions from it must be accepted with caution.

HISTOLOGY: Weichselbaum and Zuckerkandl, especially Zuckerkandl, in his later editions, (1893) had made a special study of the minute anatomy of the mucosa of the accessory sinuses. Wingrave[30] showed sections of granulation tissue from the frontal sinus in 1898. Andre[31] had in 1905 written a thesis on the lymphatics of the nose, including reference to those of the accessory cavities. Gruenwald,[32] in 1910, referring to Andre's work supplemented it, and his observations go to contradict the conclusion that the lymphatic vessels of the sinuses communicate through the bony walls with those of the nasal chamber. On the contrary, they seem only to follow the mucous membrane itself. It may be remarked that familiarity with the histology of the mucosa and an appreciation of the limitations of the injection technic on which this opinion is based, may well lead us to doubt that in life infection is only thus carried by the lymph channels. There are many of them so very minute that they may well give passage to bacteria and not to injected material. However, the channels of infection along which the germs spread to new localities are still mooted points in every region of the body. It seems very probable that even the nearby spread of infection takes place in the blood current rather than by the lymph spaces. The work of Oppikofer[33] deserves notice for its extended investigation of the normal and pathological anatomical conditions of the sinuses, especially of their histological anatomy. It signalizes one of the forward steps taken in the more thorough attempts to study the actual processes of disease as revealed by the microscope, but it also deals with facts in the gross anatomy of the parts. Eschweiler[34] contributed to the histology of the mucous membrane of the frontal sinuses and Oppikofer[35] subsequently extended his work. Goetjes,[36] in 1909, devoted an essay solely to the pathological anatomy and histology of the sphenoidal sinus, having examined it in thirty-one cases post-mortem. Like previous observers he concluded that pathological changes, observed post-mortem, were as a rule acute conditions arising during the later stages of the affections of which the patients died. They often contained stomach contents. He did not agree with the statement of some of the previous observers who claimed that in the majority of the cases there had been an antecedent rhinitis and there is some reason to believe thart this is less frequently the case than in inflammatory affection of the other sinuses.

Turner,[37] in 1903, made valuable contribution to the pathology of bone-cysts in the accessory sinuses of the nose, especially with regard to those of the maxillary sinus developed from the dental embryogenetic foci. As to the cysts of the ethmoid, Onodi[38] was warranted in saying that they are anomalies in the development of the ethmoidal labyrinth. They are of a different character and origin from the cysts of the maxillary sinus. In the ethmoid it was found that the exaggerated development or pathological processes sometimes led to a cyst cavity formed out of the bulla or other small cell at the anterior end of the middle turbinate. This was occasionally found to contain pus or a glairy mucus. The cause of the cysts occasioned some discussion. Their occurrence chiefly in women is a curious phenomenon of sex pathology. Zuckerkandl, Glasmacher,[39] MacBride,[40] Knight,[41] and others noted their occurrence and various theories were advanced as to their pathogenesis, but it was not until the publication of Stieda,[42] in 1895, that it was recognized that they are the products of inflammatory action set up in the walls of pre-existing mucosa-lined cavities in the turbinated bones, whereby the osteoblasts, forming bone on the outer or convex surface and osteoclasts, absorbing it on the concave or inner surface, result in some cases in the formation of a very large cavity.[43] A very exceptional report was made by Noltenius[44] in 1895 of 37 cases of "serous disease" of the maxillary sinus in which on exploratory puncture clear fluid was washed from the antrum. The large number of cases reported by one observer attracted attention and is still unique, though a less number of cases have from time to time been reported, usually supposed to be due to cyst formation in the antrum. Cysts of the mucous membrane of the maxillary antrum were exhaustively described by Alexander[45] and the differential diagnosis of this condition from antrum empyema was the subject of a paper by Kuhnert[46] in 1897. Gerber[47] and Shambaugh[48] in 1906 wrote of nasal cysts in the nose and maxillary sinus, their relation to the "hydrops" of the latter and their embryogenetic origin from the teeth roots. Hoffmann,[49] in 1911, extended his previous observation (1902) on cysts of the maxillary sinus in which he described his histological findings in cases of dental origin. Oppikofer[50] also contributed an exhaustive article in 1911 to the literature of dental cysts describing fully a number of cases and the histological findings, while many points in their pathogenesis are yet unexplained. He seemed to think it clear that they have their origin in inflammation of the roots and their envelopes—caries and granulation tissue representing the initial stage of their formation. There is probably a proliferation of the epithelium thus aroused, with a subsequent degeneration of the epithelium furnishing the fluid-contents of the cyst, though this is one of the points far from settled.

Teeth in the Nose: Intimately connected with the subject of dental cysts of the maxillary sinus are those anomalies of development of the teeth in the upper jaw which lead not only to cysts of their roots, but to displacement and inversion of their crowns and the wandering of the teeth through the bony walls of the superior maxillae. Naturally many of these become inhabitants of the maxillary sinus and instances of this had been noted even in prelaryngoscopic days, and early in the study of sinus disease we find many reports in literature.[51-56] A number of cases of teeth in the nose and nasal sinuses have been reported in the last two or three years.[57] Underwood[58] contributed an article in 1910 to the anatomy and pathology of the maxillary sinus in which he dealt with its embryogenetic origin in connection with the teeth, comparing conditions in various races of men.

Mucocele: Mucocele of the accessory sinuses, a rare condition which had been noted by Kuhnt was described by Avellis[59] in 1900, by Baurowicz[60] in 1901, by Bowlby[61] in 1902, by Guisez[62] in 1903 and by Onodi[63] and Moure[64] in 1905. Since then there have been a very large number of reports recorded.

Malignant Tumors: Reports of malignant tumors located in the accessory sinuses may be found scattered through general literature from almost the very beginning of medical records and I shall have to content myself with brief reference to those reports for five years following the paper of Schwenn[65] inasmuch as in laryngological literature this is the first extended reference especially confined to malignant tumors of these cavities. In 1900 he reported ten cases of malignant tumors in the accessory sinuses, two in the maxillary, seven in the ethmoid, one in the sphenoid. Kirschner,[66] Brindel,[67] Citelli,[68] Onodi,[69] Avellis,[70] Harmer[71] and Calamida[72] were the chief reporters of cases of malignant sinus disease from 1900 to 1905, but since then many more cases may be found on record.

Choanal Polypi: Observations were made by several writers[73] who called attention to the fact that many of the nasal polypi, especially those presenting posteriorly in the choanae, had their origin from and were attached to the upper part of the maxillary sinus and in the hiatus semilunaris and not in the nasal chambers proper. Kubo proposed to operate on these by first exposing their base of attachment by the external operation (canina fossa) on the maxillary sinus. Subsequent discussion has shown that by no means all polypi are thus attached. It seems probable that this origin when existing is found only in cases of the soft edematous polypi, not of the hard growths of adolescence.[74].

Sinus Tuberculosis: Weichselbaum[75] in an article on nasal tuberculosis in 1881 referred to it as occurring in the accessory sinuses. Three or four cases of tuberculosis of the ethmoidal labyrinth have been reported[76] since then.

Rhinitis Caseosa: Cozzolino at the International Congress for Otology and Laryngology in 1889 had spoken of rhinitis caseosa or cholesteatomatosa as a disease in itself. Subsequently it became evident that it was a peculiar caseation of the retained nasal discharges excited often by the presence of a foreign body but also present in cases of pus retained in the sinuses over long periods of time.[77]

Sinus Ozena: Robertson,[78] in 1893, advocated the ideas both of Woakes as to the origin of nasal polypus and of Gruenwald as to the origin of ozena. Alexander,[79] in 1909, seems to voice the present-day opinion that the only foundation for the contention of Gruenwald that ozena is a disease of the accessory sinuses lies in the fact that atrophic rhinitis and ozena are primarily a bone disease and the accessory sinuses are involved in the changes of the mucosa producing ozena just in so far as their bony walls are involved in the general pathological process of the framework of the nasal chambers. I omit mention here of the very large number of papers and discussions which have occurred since the publication of the papers of Gruenwald in which his views are upheld, because they rest largely on clinical observations uncontrolled by post-mortem examination and unenlightened by a knowledge of histological findings.

Embryogeny of the Sinuses: The exhaustive investigations of Killian had shown the embryogenetic explanation for many anomalies in the anatomy of the frontal sinuses and these came to light in the practical observations of those practicing the various forms of frontal sinus operations.[80] Anomalies in the configuration of the frontal sinuses had been early noted. The absence of one or the other septa partial or complete dividing either into compartments or pockets often much embarrassed the operators. These anomalies occasionally led to perforations through the bone and to the wounding of the dura or even of the brain substance. Compartments were left unopened or incompletely drained and other complications were met with. Many of these difficulties were avoided after the introduction of the use of the x-ray in diagnosis. It is to the embryogenetic and the gross anatomical studies of Sieur and Jacob, Killian, Onodi and others that we must return in order to take up the thread of original observation which led to the great advance in the therapy and operative technic of sinus disease. In 1895 Killian[81] published his first articles on the anatomy of the nose of the human embryo and in these articles he extended and made more exact and definite the work of Zuckerkandl, and laid the foundation for his later development of the surgery of the accessory sinuses. In England Tilley[82] published some work on the surgical anatomy of the frontal and ethmoid sinuses in which attention was drawn to their variability. In America Bryan[83] in 1895 and Myles[84] in 1896 published valuable papers in which the anatomy and surgery of the accessory sinus was discussed. Subsequently in America Coakley was an earnest and enthusiastic operator on the accessory sinuses and communicated many papers to the literature of the subject. Lathrop,[85] in 1898, published a brochure on the subject of the anatomy of the frontal and ethmoid cells, which remains with Loeb's publications America's most important contribution to the subject. Sieur and Jacob[86-87] published in 1901 an extensive and valuable work on the embryogeny of the accessory sinuses and upon the anatomical relations, which was the foundation for much subsequent work in France and America.

Anatomy of the Sinuses: At the meeting of the Society of Hungarian Ear and Throat Specialists in 1900 Onodi[88] demonstrated his anatomical preparations of the accessory sinuses which formed the basis of his later work and which has done so much to clear up many obscure points and throw light for the first time on some hitherto unknown or rather unheeded relationships of importance. His work[89] on the relationship of the posterior ethmoidal cells and of the sphenoidal cavity to the optic nerves is especially noteworthy. The embryological studies of Killian were later supplemented by a profusely illustrated treatise[90] on the anatomy of the sinuses which with Onodi's work have formed the sources from which most of the subsequent papers have drawn their embryological and anatomical information. In 1903 Bruehl,[91] Hansen and Pluder[92] and Onodi[93] made observations on the irregularities in the anatomy of the frontal sinuses. Mosher[94] in America extended the work of Sieur and Jacob. Some attempts had been made to establish a reliable measurement by which one could know with the probe that the anterior or posterior wall of the sphenoid sinus was reached in intra-nasal operations,[95] but it was not until the paper of Onodi[96] in 1904 that the importance of the knowledge of the size, relative distances from a fixed point, etc., was fully appreciated in the surgery of the accessory sinuses. Nothing has surpassed the plates and diagrams of sections of the nose and its adnexa which he furnished in this and other papers. Especially valuable is his work on the relations of the optic nerves to the walls of the posterior ethmoidal and sphenoidal sinuses (l. c.). It may be said that these contributions of Onodi with the earlier ones of Sieur and Jacob and those of Killian form by far the most valuable additions to the still earlier work of Zuckerkandl which exist in medical literature. For five years there was not much more original work of this kind attempted. Gruenwald[97] contributed a valuable article in 1910 to the literature of the anatomy of the sinuses from their embryogenetic standpoint as derivatives of the hiatus semilunaris illustrated by clinical phenomena as observed in practice, pointing out that the proximity of these cavities in the embryo to the lateral nasal furrow serve as an explanation of inflammatory and teratological processes in the maxillary sinus and in the regions lying between the eye and nose. The same subject was treated by Schaeffer[98] at this time. Onodi,[99] in 1911, published a brochure with his usual excellence of illustration and of detail on the nasal sinuses of children. A number of cases of empyema of the sinuses in children had been observed. Canestro[100] reported in 1911 empyema of the maxillary sinus in a child, 26 days old, and collected other reports in literature and made some anatomical studies of the accessory sinuses in infants which made it evident that, though rarely, the sinuses may be the seat of disease before they are fully developed. Loeb at the International Laryngological Congress (1911) and elsewhere, detailed his investigations of the cubic capacity and square surface of the accessory sinuses.

These were the beginnings and the course of that anatomical and pathological inquiry, incompletely detailed here it is true, which has been devoted to the study of sinus disease, acting at first as a stimulus and more recently as a guide to surgical procedure. Certain advances in the methods of diagnosis must now be alluded to though it is quite impossible to find space to set forth fully the evolution of that diagnostic acumen which has become the possession of all competent rhinologists. Clinical experience has played the most important part, yet it is only possible here to refer to the chief aids in the clinical study of sinus disease which have made diagnosis more accurate.

Roentgenology in Sinus Disease: I have already referred as fully as space allows to the early history of transillumination. In natural sequence we come to speak of roentgenology in the service of the study of sinus disease. On September 24, 1896, Max Scheier[101] made an address before the Society of German Scientists and Physicians at Frankfort on the value of the Roentgen Rays in the diagnosis of affections of the nose and throat. The outlines of the accessory sinuses can hardly be made out in his plates but sufficient was demonstrated to act as an incentive for future endeavor. It has resulted, for the diagnosis of accessory sinus disease, in the development of one of the most valuable aids we have in ascertaining the limits of purulent involvement of the sinuses. In connection with other adjuvants, in spite of much disappointment inevitable on the advent of a new device in medicine due to exaggerated claims, it seems to have established itself as a much more valuable procedure than transillumination which also had its day of exaggerated enthusiasm and is still after judicious criticism indispensable to the armamentarium of the rhinologist. It was, however, a number of years before this aid in the diagnosis reached a stage of practical value. The complicated labyrinth of cavities and their bony walls which go to make up the anatomy of the nasal chambers and their adnexa presented a problem of very great difficulty to the roentgenologist. Many efforts, most of them too technical for detail here, were made to overcome these obstacles. In 1903 Weil proposed the introduction into the maxillary sinus of substances forming a shadow with the x-rays in order to demonstrate its anatomical configuration and pathological state. This proved of little assistance and the difficulty of introduction and withdrawal of such powders has made it impracticable and unwise. Some cases were subsequently reported where such material acted as an irritating foreign substance in the cavities. The chief improvements in skiagraphy have been the technical ones of a more efficient apparatus both electric and photographic. Coakley[102] in America recognized the value of skiagraphy in the diagnosis and differentiation of separate sinus affections and was active in developing its application to sinus diagnosis. Herzfeld[103] in criticism of the work of Kuettner,[104] an atlas published in 1908 with 20 plates, brought out a discussion in the Berlin Laryngological Society (December 11, 1908) whereby it was apparent that by this time the consensus of opinion was that roentgenology had furnished a valuable aid in the diagnosis of sinus disease, but the short-comings and unreliability of it as an exclusive indication for operation, or even as an indication of the existence of disease, were still very great. In this and subsequent meetings Peyser, Killian, Albrecht and others expressed themselves to this effect. Although Albrecht's[105] reproductions marks a distinct advance over former work in Germany, his plates have been surpassed by other workers in America. Caldwell[106] had, in 1908, far surpassed all competitors, but the recent exhibition of stereoscopic plates, giving the perspective of relationship of the sinuses to one another seems to have brought the art to its acme of development.[107] Haike[108] published a paper in 1910 upon the skiagraphic examination of the accessory sinuses of children whereby some light was gained in the knowledge of their development and in the diagnosis of the pathological conditions which occasionally are present in them. A number of rhinologists used the x-ray in the treatment of affections, other than malignant tumors, in the accessory sinuses, but without success,[109] so far as one can judge from the reports and the fact that the procedure has been little used and has received little mention. There have been some favorable reports of the x-ray treatment of malignant tumors in the sinuses.[110]

Diagnostic Irrigation: Krause,[111] Lichtwitz, Myles and Onodi had devised curved trocars and canulae for perforation of the walls of the maxillary sinus above or below the middle turbinate for purposes of irrigation. As early as 1896 Killian[112] made use of these in detecting the presence of pus in the antrum of Highmore by washing it out of the hiatus semilunaris by the stream of fluid introduced through the canula.

Negative Pressure in Diagnosis: Seifert[113] and Rethi[114] by using the Politzer bag for inflation of the ear in such a manner that on the expansion of the bulb a negative pressure is exerted in the nose, initiated a method of diagnosis of accessory sinus disease which depends on the suction of pus from the recesses to the nasal passages where its visibility furnishes a guide to the sinus contents. Sondermann[115] and Spiess[116] devised more effective apparatus for producing negative pressure in the nasal chambers. This procedure they claimed to have a therapeutic value in the treatment of certain nasal affections, but this has not been sustained. Its chief value remains the diagnostic one. By sucking the contents out of the openings of the accessory sinuses into the middle meatus where it can be seen in rhinoscopy permits the observer to detect latent suppuration of the cavities. Of course it has not always proved efficacious in accomplishing its purpose, but it has often proved useful in avoiding the necessity for perforating the maxillary sinus with trocar and canula and washing out the contents of the cavity for diagnostic purposes,—a painful or at least an unpleasant proceeding and one not always unattended by danger.[117] Claus[118] reported four cases of death from puncture and washing out the maxillary sinus, one at least apparently from the introduction of air into a vein. Various contrivances of a suction pump driven by electricity or otherwise have thus become very useful additions to the rhinologist's armamentarium.

Endoscope: As early as 1902-03[119] attempts were made to invent an endoscope by means of which closer and more minute inspection might be made of the walls of the sinuses when introduced in the nose or through artificial openings in the sinuses themselves, especially the maxillary. More recently Tovolgyi[120] has devised an instrument by means of which the maxillary antrum is punctured and through the endoscopic canula its walls inspected. He called it an "antroskoptrocar."

Frontal Sinus Operations: Ogston[121] in referring to his own attempts to do so had declared in 1884 that there was no possibility of introducing a probe into the frontal sinus from the passages below. Subsequent work slowly but finally fully demonstrated the essential error of this assumption. I have already referred to the early proposition of Schaeffer and Lichtwitz to open the frontal sinus through the nose. This did not meet with favor at the time, though Winckler[122] in 1893 did much to show the surgical relations of the frontal sinus with the upper nasal passages were such as to suggest its practicability. In this he was supported by Scheier.[123] Very early it was recognized[124] that acute frontal sinus inflammations in the great majority of cases recover spontaneously and that it is necessary to distinguish carefully in this respect the indications for operation, but when an operation is necessary the whole drift of opinion for ten years was toward gaining access to the sinus by means of an external operation. Tilley[125] in 1896 made a study of the surgical anatomy of the frontal sinus and urged this route. In many subsequent papers and at almost every meeting of laryngologists in Great Britain and in many elsewhere, this earnest worker has contributed to the literature of the subject. Cases of brain abscess complicating frontal sinus suppuration began to be frequently reported.[127] In France Luc[128] was active and influential in the development of knowledge of accessory sinus disease and he also had occasion to note[129] the occurrence of meningeal infection after an operation on a tumor of the frontal sinus. In 1884 Ogston (l. c.) had operated on the frontal sinus by an angular incision, a vertical one along the wrinkles between the eyebrows meeting a horizontal incision parallel to the wrinkles of the brow. Skin and periosteum being raised he applied a trephine to the bone and made a large enough opening to expose the contents of the sinus. This was only practiced in one case. He then made an incision 1½ inches in length commencing at the root of the nose and extending upward over the nasal eminence of the frontal bone in the central line of the brow. Luc's operation was similar and the method is sometimes referred to as the Ogston-Luc operation. He, however, employed curettage and then inserted an intra-nasal drain. This procedure was practiced in London by Waggett[130] and others. This operation Luc and many others abandoned for the operation of Killian. The operation of Kuhnt[131] by removing the front wall of the sinus produced such deformity that operators and patients alike shrank from the disfigurement. This the operation of Killian largely avoided. In 1895 he described[132] and in 1902 he further elaborated[133] his method of incision through the eyebrow and preservation of the upper orbital arch whereby complete exposure of the frontal sinus was obtained and less disfigurement was the result. By prolonging the incision down beyond the inner angle of the orbit a field of bone was included in a flap turned downward and outward which could be turned back into place after curettage and breaking down of carious bone and septa obstructing drainage in all the upper accessory cavities of the nose, the frontal, the anterior and posterior ethmoidal and the sphenoidal sinuses. Packing the cavities and irrigation practiced through drains left in the external wound could be carried out. There can be no doubt, that for the external operation this initiated a technic far superior to any hitherto practiced. In the same year (1895) Gussenbauer[134] published an account of his operation which consisted in a temporary resection of the nasal framework in order to expose the frontal, ethmoidal, or orbital cavities. A curved incision starting over each eyebrow ran down along each side of the nose and joined at the lower level of the nasal bones. The skin and nasal bones were turned up on the forehead in such manner as to expose the anterior part of the ethmoidal region and the frontal sinus. Many other external operations were suggested and performed. A resume of some of this work may be found in Bosworth's second volume of "Diseases of the Nose and Throat" in the chapter on the external operations on the nose (1889) which gives a good idea of the methods prevailing at that time and will serve to indicate the advances made in the development of the more rational and conservative methods at present (1913) employed. These were the methods which the operation of Killian largely displaced.

At the meeting of the British Medical Association, in 1899, much time was taken up in the laryngological section by English, American and French authors in the discussion of frontal and ethmoidal sinus suppuration. Charters-Symonds, Moure, Luc, Tilley and Logan Turner contributed papers of value. In that of Tilley the complication of brain abscess following operation was given prominence while Turner reported examinations by means of transillumination which revealed many apparent anomalies of the frontal sinus. While the operation of Killian has been modified in many ways, essentially his method has, until lately, been the prevailing practice. In 1910 and 1911 Broeckaert,[135] Ritter,[136] Jacques[137] and Luc[138] reported favorably on the results of operations in which the whole anterior frontal wall is preserved and only the lower or orbital wall of the sinus is removed. This modification was adopted chiefly because, even with the preservation of the orbital arch, the removal of bone above it often leads to deep depressions, to fill out which many operators subsequently resorted to the injection of paraffin.

At the meeting of the American Laryngological Association in 1905, there was a long and valuable symposium and general discussion of sinus disease and the operations for its alleviation. In a separate paper, however, Ingals reported a series of cases beginning in 1893, in which he had treated the frontal sinus through the infundibulum leaving a gold tube in some of the cases for continual irrigation. Casselberry mentioned having employed a burr to enlarge the natural opening. These cases were selected, for naturally septa in the frontal sinus would defeat the drainage, and in some the natural opening was not successfully entered. The use of the unguarded nasal burr being considered dangerous, in 1907 and 1908, Ingals[139] and Skillern[140] described a device by which a probe was first introduced in the frontal sinus then an electric trephine was introduced over it and an enlargement of the duct obtained in such a manner that neither the lateral walls nor the roof of the frontal sinus beyond the probe could be damaged. Worthington[141] also made use of this method, and by 1910, Ingals[142] was able to claim a cure of the suppuration of 95 per cent of the cases in from six weeks to six months. By 1911, this route of entering the frontal sinus had been used by many operators. Ingals had proved the position of the introduced probe by the use of the x-rays. Sieur and Rouvillois[143] again made an anatomical study demonstrating on the cadaver the possibility of reaching the frontal sinus by the intra-nasal channel. Vacher,[144] who had previously advocated the treatment of the frontal sinus suppuration by the intra-nasal method again referred to the subject in 1911, in France, while in Germany, Halle,[145] using a protected, electrically-driven burr, reported having operated on nineteen persons in this way. A shield was held behind and internal to the burr to protect the orbital plate of the ethmöid. It was freely admitted that these internal operations on the frontal sinus were not suitable for all cases. Vacher's internal method of operating on the frontal sinus met with considerable criticism in France,[146] as did the similar propositions of Halle in Germany and of Ingals in America; but there is no doubt that in selected cases it has become the operation of choice with many rhinologists.

Maxillary Sinus Operations: It is difficult to observe any chronological sequence in a description of the operations on the maxillary sinus in the period here dealt with. We have seen, however, in the eighteenth century the antrum had been frequently opened, usually but not always through the dental alveoli. Krause, Lichtwitz, Myles, Onodi and others had followed the lead of Mikulicz in perforating by trocar the nasal wall of the antrum above or below the inferior turbinate, and Onodi,[147] in 1903, had devised a trocar for entering and dilating the natural opening in the middle meatus. Jansen,[148] after referring to the reports of Hartmann,[149] who, in 1899, claimed to have cured a large proportion of cases of antrum suppuration by irrigation through the hiatus semilunaris and to the poor results obtained by methods of operations which were really only those of earlier pre-rhinoscopic authors revived and to which I have referred in foregoing pages, described a more thorough opening of the sinus through the facial wall of the upper jaw. He did not in this paper inaugurate any absolutely new procedure, but it was the first of his publications which subsequently developed his method of attacking the ethmoidal and sphenoidal sinuses through this avenue of the maxillary sinus. It also drew attention more pressingly to the fact that pus in the antrum owed its origin often to suppuration in the frontal, ethmoidal and sphenoidal cavities, and explained the reasons why so often disappointment followed operations for the relief of pus in the maxillary sinus above. His proposal to turn the mucous membrane formerly covering the excised bone into the antrum was subsequently adopted by other operators, where disease or curettage in the treatment of it had destroyed the antral mucosa. Berens,[150] in America, practiced this method in a large number of cases. In America, in 1893, Caldwell[151] described a method of operating on the maxillary sinus, which consisted in opening the antrum in the canine fossa and through this making an opening in the nose. Later this operation was practiced by Spicer[152] in England, and by Luc,[153] in France, and has generally been known as the Caldwell-Luc operation. Kuester had, in 1899, advocated the extensive opening of the external bony walls of the antrum in conformity with the extreme doctrines for all suppurating cavities. Partsch[154] and Scheinmann had advocated the use of a trephine. Others used the chisel. All operators used tampons for a shorter or longer time after operations. Boenninghaus[155] followed the technic of Caldwell-Luc, but turned into the antrum, as Jansen had recommended for the mucosa of the facial wall, the mucosa of the nasal chamber covering the bone-piece he removed, which was often very large. Packing the antral cavity only he thus held the mucosa in place. Luc,[156] in 1900, published his lectures on suppuration in the accessory sinuses of the nose, which is a fair representation of the best work in France at the time. All operators on the maxillary sinus met defeat in their results owing to the prompt closure of any opening made through the bony walls, unless an obturator was worn as in the old Cooper operation and the later Jansen operation above referred to.[157] The perforation would not remain open until the discharge ceased. To avert this and avoid the irritation of an obturator or a metal tube drain, the Caldwell-Luc operation was extended by some operators to the complete removal of the naso-antral wall, making one large cavity out of the antrum and the inferior and middle nasal meatus. Alsen[158] and Gerber, in 1901, carried out this method. Denker,[159] in 1905, extended the technic of Luc in such a way that the entire inner bony wall of the maxillary antrum was removed and the mucous membrane of its nasal surface preserved so that by means of a tampon it could be made to line the denuded bony floor of the antrum. He adopted some of the technic of Jansen, of Kretschmann,[160] Boenninghaus, Friedrich[161] and Boerger.[162] Freer[163] and others have succeeded in removing the greater part of the inner wall of the antrum, including the inferior turbinated bone by intra-nasal operation, thus accomplishing the object the Caldwell-Luc was designed to attain. While its possibility was demonstrated, this difficult operation has not found favor in competition with the procedure of Luc until recently, but in the last two or three years this method has been largely practiced.[154] Whether by the extensive operation of Denker or by that of Freer and others, the whole naso-antral wall with the inferior turbinate or a large part of these structures being removed, it was soon found that the walls of this cavity became encrusted with dried secretions and continual irrigation was necessary for years. This was another reason for the use of a more rational surgical treatment of sinus disease. Gradually the object to be attained was seen to be to locate the bony cell or cells in the upper nasal labyrinth, which was the origin of the pus in the lower meatus and the antrum itself and to establish a drainage by removal of the lower bony wall or the obstructing soft parts. Jansen sought to accomplish this through the antrum by scraping away the ethmoidal cell wall at the upper part and the sphenoid sinus wall at the upper and posterior angle of the antrum. The technical difficulties were great and the results in the hands of other operators were not brilliant. Cases were constantly being reported in which the sphenoidal sinus was opened through the nose, curetted, drainage established and the case cured without the extensive and difficult technic of Jansen, as, for instance, in the report of Flatau.[165] For the ethmoidal and sphenoidal cells this, chiefly through the demonstrations of Hajek[166] has finally become in more recent years the operation of choice. To obviate the drawbacks which the experience of years has demonstrated in the results of creating these large cavities they have been much limited of late. Hirsch,[167] in 1911, described an operation whereby he sought to overcome the evil effects of the destruction of the inner wall of the maxillary sinus in those operations on it where the nasal chambers are made to communicate widely and permanently with it. The inferior turbinate was temporarily resected, a wide opening established beneath it and then it was fastened again in place. Still more formidable operations grew out of the procedure of Rouge.[168] In 1873 he had suggested an operation consisting in an incision beneath the upper lip and a separation of the septal cartilage from its articulation with the superior maxillary bones, thus gaining larger access to the interior of the nose than could be obtained through the natural opening. Later this technic was supplemented by the procedure of Partsch[169] and Loewe,[170] which consisted further in a severance of the whole septum and of the outer and inner, anterior and posterior walls of each antrum from the palatal arch so that the whole of the latter could be depressed on the tongue and a much larger access thus obtained to all the sinuses, but especially to the sphenoid region and the posterior ethmoidal cells, chiefly designed to facilitate the removal of post-nasal tumors. The hemorrhages occurring in these formidable procedures prevented their general adoption, though they have occasionally been reported. Bardenhauer's modification of the Rouge operation, in 1898, consisted chiefly in a very much wider separation of the soft parts from the anterior surfaces of the bones of the face and even the dislocation of the nasal bones to gain free access to the frontal sinuses as well as to the maxillary and ethmoid. Goris,[171] in France, was an advocate of this technic and for a number of years was active in the performance of many serious operations about the nose and its sinuses. Moure,[172] in 1896, drew attention to purulent infections of the maxillary sinus in children as having some relation to the eruption of the teeth at a time when the sinus had become completely developed, but d'Arcy Power,[173] 1897, claimed to have observed maxillary sinus empyema in a child only eight weeks old. Mayer,[174] 1901. reported a case in a child 2½ years old. Coffin,[175] in reporting four cases, alluded to suppuration in the maxillary sinus operated on when the child was six months old. I have referred to the recent work of Haike, Onodi and of Canestro on suppuration of the accessory sinuses in children, the latter reporting a case in a child, 26 days old.

Ethmoid Cells: The claim of Schadle[176] that affections of the maxillary sinus are often a factor in the etiology of hay-fever has received no confirmation or recognition. These reflexes had been noticed by Bosworth[177] as due to ethmoid disease. His enthusiasm for intra-nasal operation in the eradication of nasal polypi and their bony attachments in the ethmoid accomplished much in arousing interest in ethmoidal disease in America, though his contention that the latter is a primal factor in the etiology of asthma and hay-fever has not, as a rule, received the support of his colleagues. Everywhere in intra-nasal operations on the ethmoid, removal of the middle turbinate in whole or in part and often of the lower turbinate was a prelude to the various surgical attacks on the ethmoidal cells and the improvement in the surgical armamentarium for this purpose has been very great. Gruenwald[178] devised a number of curettes, chisels and rongeurs by means of which access to and treatment of the accessory sinuses were greatly facilitated. These are set forth in his text-book and in many previous communications on intra-nasal surgery. Hajek (l. c.) publishing his first edition in 1899, has, of late years (1899-1909) unquestionably been the most influential writer in developing the technic and in insisting on the intra-nasal route for operations on the ethmoid cells. The operations of Jansen, of Killian and of Rouge with their innumerable modifications represent the operative technic in reaching the ethmoid by the extra-nasal route, but involving, as they do, the preliminary invasion of the frontal or maxillary sinuses, they have been for the most part practiced in cases in which these cavities were themselves affected. As intra-nasal methods have with increasing frequency been applied to these, the ethmoid technic as developed by Hajek and others has come more and more into vogue. Uffenorde,[179] in 1907, wrote a monograph on the affections of the ethmoid cells advocating the external in preference to the internal methods of operating, but the drift has been away from this advice for a number of years.

Sphenoid Sinus and the Hypophysis: Clearing away the ethmoidal labyrinth either by intra-nasal operation or by the way of the antrum or frontal sinus is naturally followed by the exposure of the sphenoidal. We have noted the relationship which Onodi shows to exist between the posterior ethmoidal cells and the sphenoidal cavity. While this is fairly brought out in the earlier work of Zuckerkandl, it was studied later much more in detail in connection with the operations on these cavities not only to evacuate their contents, but to furnish a route to operations on the hypophysis cerebri recently undertaken. The very great interest excited in the phenomena presented, physiologically and pathologically, by the ductless glands inevitably led to the development of surgical attacks on the hypophysis. The way of reaching the sphenoidal sinuses through the nose had already been pointed out in the work of Zuckerkandl, Killian, Tilley, Coakley, Gruenwald, Jansen and others to whom I have referred. These are reviewed with the writings of others, by Skillern.[180] In 1906, Horsley[181] had reported his method of making externally a lateral incision and lifting the middle cerebral lobe and thereby reaching the pineal gland without entering the nasal cavities. Caton and Paul,[182] in 1893, had first proposed this method. Moskowitz,[183] Schmiegelow,[184] Hirsch,[185] Goris,[186] West[187] operated through the nose, the latter as well as Skillern giving a good bibliography of the subject. Loewe[188] and Vorschuetz,[189] operating by the Partsch method, extended it in such a way as to include "decortication of the face," i. e., removing from the soft parts, after reflecting them upward, the facial and nasal wall of the antrum and the ascending ramus of the superior maxilla. Kuehn,[190] in 1911, proposed to reach the sphenoid sinus and through it the hypophysis by way of the mouth, chiselling some of the hard palate, some of the vomer and the pterygoid process, and carrying the soft palate with them backward in the pharynx. These were to be stitched back in place after the evacuation of the sphenoid. Hypophyseal surgery was discussed in 1911 at the meeting of the American Laryngological Association, and Onodi[191] made some very interesting remarks on the subject elesewhere.

Complications of Accessory Sinus Disease: It remains to say a few words of the complications of accessory sinus disease which were reported from time to time as they had an important influence on the development of the diagnosis and operative therapy. They were chiefly those of the contents of the neighboring cavities of the orbit and the cranium. In 1876, Hermann Knapp[192] reported a case of orbital abscess in which the cavity involved the anterior ethmoidal cells, in which apparently the trouble originated. Subsequently this author made many contributions to the same subject,[193] reporting, in 1880, the invasion of the orbit from an empyema of the frontal sinus. Others also noted such cases[194] before the publication of Ziem's paper. In 1893, Ziem[195] drew attention to the intimate connection between orbital and ocular lesions and disease of the upper accessory sinuses. These observations, though forgotten for many years, have of late been expanded by the published experiences of others, especially by the valuable anatomical work of Onodi.[196] Shortly after the appearance of Ziem's article. Kuhnt (l. c.) from the standpoint of the ophthalmologist studied the affections of the frontal sinus in their relation to eye disease. In France it was treated by Roehmer.[197] Axenfeld,[198] in 1902, wrote of the orbital complications of disease of the frontal and ethmoidal sinuses. After four or five years the number of articles and treatises on the relationship between accessory nasal sinus disease and ocular orbital and optic nerve affections was very large.[199-205] A large number of reports of ocular and orbital complications were made in 1911.[206]

As early as 1895, Dreyfuss[207] could collect reports of many cases of cerebral disease resulting from suppuration in the nasal sinuses, twenty-two being due to frontal sinus disease, the posterior wall of the frontal sinus being perforated in many of them by an osteitis. It has since been more fully recognized how apt the inflammation of the soft parts is to spread to the bony walls. Craig,[208] in 1900, published a collection of cases from literature of this nature, though he seemed to find reason to believe that maxillary antrum suppuration was more commonly the starting-point for cerebral inflammation than that of the frontal,—a view which other investigators have for the most part not supported. St. Clair Thomson[209] also wrote on the subject. Onodi,[210] in 1911, collected statistics of 106 cases in which cerebral abscess had occurred as a complication of accessory sinus disease and in these 106 cases the frontal sinus was involved in eighty-two, the ethmoid in eleven, the maxillary sinus in four cases and the sphenoid in one. It was recognized that an osteitis was apt to accompany affections of the frontal sinus and the complications which experience revealed in these cases seemed an indication, to some authors, for operation in every case of frontal sinusitis. To others it seemed that these operations themselves were in many cases apt to precipitate rather than to avoid the dangers arising from them. In Gerber's book[211] we find an example of the former view, while in Kuettner's review[212] of it we find set forth the conservative opinion which seems likely to prevail in the future.

Trend to Conservatism in Operation: Weil,[213] in 1896, not only expressed the opinion that nearly all inflammatory affections of an acute nature tended to spontaneous recovery, but that these, as well as the chronic cases, were due to an extension from acute inflammatory conditions of the nasal mucosa. He and many who took part in the discussion of his paper at this time in Vienna expressed a preference for treating maxillary sinus disease through the nasal orifice of the antrum, or through some enlargement of it. The difficulty, and, in many cases, the impossibility of this technic subsequently became evident, but in Vienna, operative procedures on the accessory sinuses, have always been markedly under the influence of Hajek's sane and painstaking methods. Many points in the experience hitherto gained came out in the discussion on accessory sinus disease at the International Medical Congress at London, in 1897. In the same year a similar discussion followed the presentation of a case by Bryan at the meeting of the American Laryngological Association. Killian[214] recommended, in 1909, a method of treatment of acute accessory sinus disease by the application of heat and light furnished by an air-tight box supplied with electric lights of high candle-power, a sort of sweat-box supplemented by high intensity light, invented by Bruenings. This was said to relieve the pain and promote the flow of secretion and hasten the natural process of cure. At this meeting he and others expressed opinions favorable to a more conservative attitude in questions of operative procedure, but long before this it had become evident to conservative men that the enthusiasm for extensive and destructive operations on the accessory sinuses was being carried to a dangerous extreme. In 1901 Sir Felix Semon[215] warned his confreres against this tendency in England. A similar protest[216] in America, in 1905, was the consequence of this continued lack of critical differentiation in the selection of cases for operation. Shortly after this there were signs of a more rational judgment, beginning to be brought to bear on the subject. Kuettner[217] on many occasions maintained the same conservative ground in Germany. Hajek's[218] conservative stand in 1909, in Vienna, in regard to the treatment of accessory sinus suppuration is a further instance of the rational position which has finally, after twenty years, been established among laryngologists. Taken together with Semon's early and wise words in London, and Kuettner's in Berlin, it is especially strengthened by the general tone of moderation which has found its way into most, if not into all of the recent works on the subject. At this meeting, much of the time was taken up with the discussion of this aspect of the subject and with the significant frequency of cerebral complications in accessory sinus troubles which have been treated surgically. An interesting discussion of the subject took place at the meeting of the American Laryngological Association, 1903. For the ten years previous to this it had been often urged that the nasal sinus affections could be traced in their origin to inflammation within the nasal chambers. This was emphasized and the remark was made by Freeman that the sinus affection, when unilateral, was nearly always on the side of the nose presenting in the meati the greatest amount of obstruction. It was not until the resort to intra-nasal operation in opening the sinuses became more common that the necessity was felt for correcting these intra-nasal causes of sinus disease. This has grown into a weighty argument against the external operation, when it is possible to avoid it. While there has been reason to suppose that many of the cases with meningeal symptoms as a result of accessory sinus disease, reported occaionally as cured after operation on the nasal cavity, were really cases with cerebral symptoms of septicemia, there are some reports in which the evidence of an actual purulent meningitis existing, yet cured, is very strong.[219] There still seems good reason to suppose that in the vast majority of the cases such a fortunate result does not obtain, except in the event of a cerebral abscess opportunely detected and drained through an opening in the walls of the sinuses. As an example of the extent to which radical operations were advocated for accessory sinus disease by some writers, one may cite the brochure of Uffenorde,[220] published in 1907 shortly after the movement in criticism of operative radicalism had gained headway. His declaration that every conservative method was fruitless, even harmful, was promptly criticised. Since about this date there can be clearly recognized a general tendency among rhinologists to abandon access by external routes to the accessory sinuses and to adopt those methods, the technic of which has been greatly advanced, by which openings are made from the nasal chambers not only into the antrum of Highmore and the sphenoidal and ethmoidal cells, but into the frontal sinuses as well. Not a little of this change of method, as well as the chief element in the drift towards more conservatism was due to the experience with results of the more thorough of the external operations. Secretion of pus was found to persist in a very large number of cases and though other symptoms, especially pain, were often relieved, dangerous and widely mutilating operations began to seem hardly justified in a class of cases, eagerly accepted at first as suitable for operation. It was realized then that the imperfect results attendant on less radical methods at first were not always due to conservatism. With the improved intra-nasal technic, there was less cause for criticism as to imperfect drainage being secured. That there is still a respectable number of cases in which the Caldwell-Luc, the Killian and the Jansen operations are considered justified is almost universally recognized.

Local Anesthesia in Sinus Operations: While cocain was at first used for intra-nasal operations only, from time to time propositions had been made to operate externally on the accessory sinuses under local anesthesia. In 1911, Braun[221] proposed and carried out operations on the sinuses under anesthesia obtained by the injection of the derivatives of cocain into branches of the trigeminus nerve at its facial points of emergence from the bones. Killian,[222] in 1912, spoke well of it when applied to the Gasserian ganglion. Such a radical operator as Uffenorde[223] was a convert to this method.

Vaccines: As in other suppurative processes, the introduction of vaccines, due to the observation and therapeutic claims of Sir Almoth Wright, may be noted at this time (1910) in the therapy of the accessory sinuses.[224]

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New York Post-Graduate Hospital.

Peculiar Case of Carcinoma of the Pharynx. R. Imhofer. *Prac. med. Wchnschr.*, March 21, 1912.

Case of man aged 45 years. A relatively small tumor which did not penetrate deeply in the mucous membrane caused intense glandular swelling. The blood took on a luekemia-like character. Death was indirectly due to an inter-current angina which was itself entirely relieved but which caused the carcinomatous glands to become purulent and a sepsis to develop. Ed.

AN UNUSUAL CASE OF OSTEOMA OF THE SUPERIOR MAXILLA.

DR. M. DELMAR RITCHIE, PITTSBURGH.

Emil S., a German of gigantic stature, was referred to the rhinological side of the Columbia Hospital February 17, 1912. Had been a sufferer from the consequence of complete nasal stenosis for seventeen years, and presented the frog face typical of osteoma of superior maxilla. The left orbit with its contents was displaced markedly upward and outward, history bringing out a diplopia of long standing. The palpating digit in the naso-pharynx outlined a bony mass of the size of the butt end of a hen's egg. The finger, however, could not be passed between the posterior surface of the growth and the anterior wall of the pharynx.

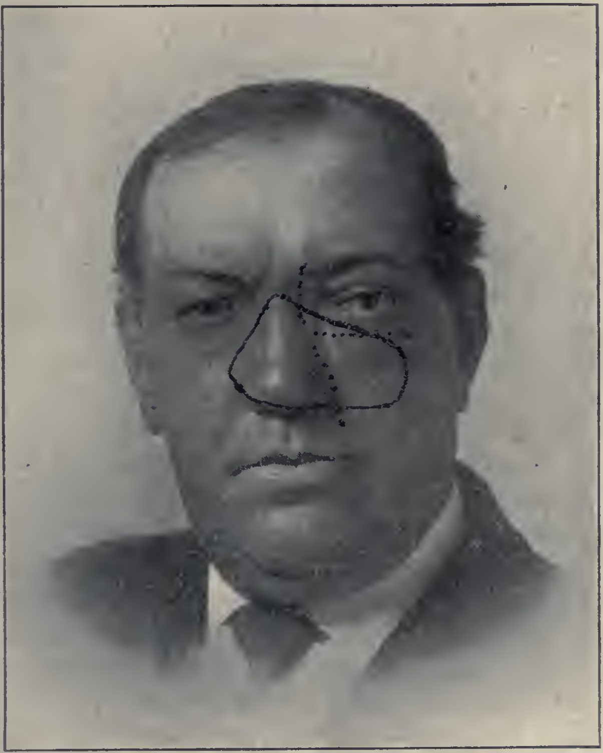
In June, 1902, Dr. Gustave Mueller, since deceased, at the Homeopathic Hospital, used a small trephine under local anesthesia and succeeded in providing for our patient some nasal respiration. The patient stated that so long as the nose bled he had fair nasal breathing, but in a few months there was a lapse into complete stenosis. Dr. S. L. McCurdy in 1910 removed three ounces of an osteoma from our patient by way of an external incision.

Examination before operation demonstrated purulent ethmoiditis. A probe could be passed through the left nasal orifice around the bony mass and presented (via fistula) at inner canthus. The ethmoidal pus found its exit by way of this fistula, and the left palpebral fissure was filled by this pus on any attempt to blow the nose.

An incision was made starting at the inner terminus of the left eye-brow, extending over the nasal bone into fissure at labial attachments of left ala, to a point in upper lip just short of its oral mucous membrane. A second curvilinear incision left the first at level of left inner canthus and extended half an inch below the infra-orbital margin to malar prominence.

Retraction of flaps, the nose being turned well over right cheek, showed an ivory-like mass larger than a man's fist encroaching in every direction. All that was left of the septum was a fragment of the triangular cartilage jammed against the right maxilla.

The presenting picture was that of a nasal cavity forcibly expanded in every direction, its septum and sinuses being obliterated by a white bony mass. There was a V-shaped prolongation extending upwards pressing upon the ethmoidal areas. The mesial walls of both antra were obliterated, and the nasal floor could not be outlined. With chisel and mallet the mass was removed piece-meal. So great was the density that five new sharp chisels were necessary to complete the work. The proximity of the posterior end of the mass to sphenoid bone (less than a half inch intervening) associated with the extreme density, made chiseling at a depth of five inches somewhat hazardous.



Heavy line shows size of osteoma; dotted lines show incisions.

A sheet of lead in the pharynx saved the mucous membrane of the pharynx. Most of the ethmoidal cells on both sides were obliterated, and those that remained were curetted. The right antrum was about half filled with an extension of the mass, while the left was completely filled.

A study of the outlines that could be made out in the progress of the removal with the direction of the deflection, leads to the conclusion that the mass had its origin in the left superior maxilla. Removal was persisted in until in no direction was there found any bone of the ivory hardness. Sinuses were curetted and mucous membrane was carefully stitched as first step in closure, being particular to obliterate the fistula into left inner canthus. The external wound was closed with fine silk, which was removed on the second day with little scar remaining. The operative field was packed by way of nose with tincture benzoin comp. gauze. Patient left hospital fifth day. Nasal respiration restored and was unimpaired July 1. All distressing pain and insomnia previous to operation disappeared.

Empire Building.

Otogenous Sepsis and Pyemia. F. Ludwig, *Ztschr. f. Ohrenh. u. Laryngo-Rhinol.*, Band 65, Heft 4, August, 1912, p. 289.

The writer reports fourteen cases of sinus thrombosis, mostly in young individuals. Ten of the cases followed acute middle-ear suppuration, while four were due to chronic otitis; among the latter, cholesteatoma was present in three cases. Death occurred in three cases only. Recovery was mostly protracted and in five cases required secondary operation.

The jugular vein was ligated in but two cases. The author is, however, of the opinion that even in these cases the result would have been just as good without ligation. In the fatal cases, on the other hand, this procedure would not have been of any avail.

In cases of severe, acute otitis due to the infectious diseases, the sinus has to be exposed in the very first days. If, after waiting a few days the temperature does not drop, the sinus should be further exposed toward the torcular and downward; in such cases a progressive phlebitis and periphlebitis of the sinus, together with a progressive affection of the surrounding bone is always encountered. The writer relies in such cases upon the vitality and bactericidal powers of the blood and does not resort to ligation of the jugular vein or opening of the sinus. In the presence of a small mural thrombus, the exposed sinus wall is disinfected. The author advocates the same procedure in uncomplicated acute or chronic middle-ear suppurations, where suddenly symptoms of sinus involvement develop. Glogau.

A PROBABLE TUMOR OF THE LUNG DIAGNOSED BY UPPER BRONCHOSCOPY.

DR. RICHARD H. JOHNSTON, BALTIMORE.

In May, 1912, Mrs. J. E. L., 62 years old, was referred to me by Dr. James Bordley for persistent cough with expectoration of blood. The patient had been examined by Dr. T. R. Boggs who found stenosis of a bronchus on the right side. Though the patient was stout and had a thick neck there was no difficulty in passing the 9 mm. bronchoscope without the speculum. Aside from some congestion the trachea and main bronchi were normal. Nothing abnormal was found in the secondary bronchi leading to the upper and middle lobes of the right lung. On passing the bronchoscope further down blood was seen coming from one of the anterior terminal bronchi. When this was wiped out, one could see at the beginning of the tertiary bronchus a fringe-like mass which bled easily. Unfortunately I had no small forceps powerful enough to remove a piece for microscopic examination. However, I had no hesitation in making a diagnosis of a tumor of a tertiary bronchus with probable extension to the lung. Eight months previously Dr. Bordley had removed the right eye for sarcoma of the ciliary body. While the examination was unsatisfactory in that we did not secure a specimen for microscopic examination, we did succeed in establishing the source of the blood. Time will tell whether the growth is malignant or not All who saw the picture through the bronchoscope agreed that it was a tumor, not amenable to treatment.

807 North Charles Street.

Diagnosis and Therapy of Laryngeal Carcinoma. J. FEIN *Monatschr. f. Ohrenh. u. Laryngo-Rhinol.*, Heft 1, p. 69, 1912.

Fein reported a case of laryngeal carcinoma in which, however, the characteristic laryngeal symptoms were few and the histological diagnosis uncertain. The case covered a period of fourteen years In connection with this report Fein discusses the value of microscopic examination in the diagnosis of laryngeal carcinoma and the limited value of radical operation. ED.

THE EARLY HOME TREATMENT OF THE DEAF CHILD.*

DR. G. HUDSON-MAKUEN, PHILADELPHIA.

In order to make the so-called oral method of teaching the deaf child more widely applicable and generally useful, it will be necessary to improve somewhat upon our present methods of teaching it, and it is my purpose at this time to emphasize one of the reasons why many deaf children do not become oral successes.

As I have said on a previous occasion, the most important period in the life of the deaf child is that which comes before the school age. It is the period during which the hearing child develops a fairly good command of language preparatory to taking up the work of his school education. Under our present system, as Dr. Kerr Love has said, the deaf child arrives at the school age in the intellectual condition of the child of two, and consequently several years must be devoted to the acquirement of speech before his general education can be taken up. This is on the principle that any systematic and effective intellectual development must proceed simultaneously with the development of the vehicle for thought, or some form of language and speech.

This principle is well illustrated in the case of the normal hearing child, who not only learns to understand the speech of others and to acquire speech for himself, but he does it all during the first four or five years, and without any conscious effort on his own part. Children inherit a natural tendency toward the development of speech, which can only be thwarted in its processes by some positive and pronounced physical or psychical disability.

The period during which the understanding of speech and its natural consequence, the practical use of speech, are developed is a definite and limited one, and when it has once passed it is doubtful whether perfectly normal speech can ever be acquired. This period begins in the second year and it is practically half over at the arrival of the school age; so that manifestly, other things being equal, it must be a mistake to deprive the deaf child of all this valuable time.

The principle of non-interference with the development of the normal child has many arguments in its favor, but that it cannot be applicable in the case of abnormal children must be admitted by those who have had experience with the deaf. The normal child, possessed of all his faculties, easily and quickly adapts himself to his environment and grows like "Topsy" into more or less perfect harmony with his surroundings; but when he is deprived of one or more of his senses, this harmonious development is at once checked and he becomes different from his fellows. Not only does he not improve with age, but he retrogrades, especially in respect to his emotional and psychical condition.

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*Read at the meeting of the Ninth International Otological Congress, Boston, August 16, 1912.

The deaf child, for instance, is usually a spoiled child, and when left to his own devices during the period immediately preceding the school age, he becomes mentally and physically incapacitated for the reception of any kind of instruction until after a more or less protracted course of training has been carried out.

The deaf baby is generally misunderstood and therefore neglected. The hearing baby, on the other hand, immediately becomes the pride of the household and receives too much attention. In this way they are both spoiled. Neglect of the deaf child, however, is a specially serious matter, because it tends immediately to check his natural and inherited tendencies to acquire language and speech. Even the congenitally deaf child inherits, through a long line of hearing ancestors, marked tendencies or inclinations to speak, as is shown by his babbling and prattling. These early phonatory and articulatory manifestations are the beginnings of speech and they should be encouraged to the greatest possible extent, and not ignored, as is usually the case.

The normal child learns the meaning and use of words by hearing them frequently repeated and by observing their association, and it has been shown that the deaf child can do likewise, with only a little less accuracy, by seeing words frequently repeated.

That hearing is not absolutely essential to a more or less accurate understanding of speech has been fully demonstrated in the case of numerous deaf children. Strictly speaking, speech is never heard, but only the voice is heard, and this, as has been pointed out, is no essential part of speech. Animals possess the faculty of phonation, but articulation is the prerogative of man. The phonetic element in speech is heard, while the articulation, or speech proper, is seen rather than heard, even in the development of normal children.

The training of the powers of observation, therefore, is of the first importance in the education of the deaf child. It has been found that the one with the most observant eye is the one who becomes not only the best lip-reader, but also the best speaker. The hearing child possesses more inducements to use his powers of observation than the deaf child, because he looks for the source of what he hears, whereas the neglected deaf child lapses into a world of silence and soon gives up trying to understand his environment. Special training of the powers of observation, therefore, is indicated at the earliest possible moment and numerous exercises for this purpose will readily suggest themselves. The child should be trained to look at things at different angles without moving the head, thus giving the exercise necessary for the development of the ocular muscles. Especially should the deaf child be trained to observe the facial movements employed in speaking, and the mother or governess should be impressed with the importance of keeping her face in a good light.

Next in importance to the development of the powers of observation in the deaf child is the development of the sense of touch. It has been shown that of all the physical senses, the sense of touch is the first to manifest itself in infancy and the first also to retrograde or deteriorate when it is neglected. This fact is recognized in the Montessori method or system of education, in which the sense of touch is utilized at the very beginning as a means of teaching not only the meaning and use of words, but also the writing of them. The tactile sense training cannot begin too early and there is scarcely any limit to the means for its employment. Just as the child may be more easily taught to use his powers of observation in the very early years, so may he be taught to use his sense of touch; and when we consider how essential the tactile sense is to a well modulated and inflected voice, especially in the absence of hearing, we can readily understand the importance of its early development.

The great obstacle to the development of speech in the deaf child is indifference or neglect on the part of those coming in contact with him, and this indifference or neglect is due almost entirely to ignorance. If the mother could know the possibilities in her child, she would not only not give up in despair, but she would take pleasure, as the skilled teacher takes pleasure, in watching and assisting in his development. In no department of educational work, therefore, is the need for the education of mothers so great as in this particular one. The mother should be made to understand that her deaf baby in all probability differs from hearing babies only in respect to his deafness. I say in all probability, for obviously the thing that caused the deafness might also have deleteriously affected the delicate cerebral structures in such close proximity to the essential organ of hearing.

It has been demonstrated, to be sure, that deaf children after the school age are not quite the equal of hearing children, either physically or mentally, but I am convinced that this is true chiefly because of the handicap which deafness imposes upon the child during the very early years, and the fact that no adequate provision is made during infancy to cut down this handicap by making other important physical senses do the work of the absent one.

Normal hearing-power, of course, is the one thing needful to the natural and automatic development of speech in children, but in one deprived of hearing, this development must take place, not automatically, but as the result of carefully planned voluntary efforts; and my own experience has led me to the conclusion that the training of the powers of observation and the sense of touch according to scientific methods would have the effect of placing the otherwise normal deaf child nearly, if not quite abreast his more fortunate fellows in the race of life. This work, however, must begin in early infancy, or as soon as the diagnosis of deafness is made, otherwise the physiological developmental speech-period will have passed and the physical, mental, and emotional nature of the child will be deleteriously affected by his inharmonious surroundings and apparent neglect.

It is in the nursery, therefore, that we must look for the beginning of the proper and effective education of the deaf child. It is in the nursery that the child begins to evince inherited tendencies that correspond in their importance to the instinct of the lower animals, and the greatest of these inherited tendencies is the tendency toward the development of speech. To allow the deaf child to pass over this period without acquiring some knowledge of speech and speech-reading and then to expect him later on to acquire these great essentials of life would be like depriving a kitten of the opportunities for the development of the play-instinct and then expect the cat later on to be playful and happy.

Having shown that the deaf child's education should begin at the very earliest possible moment, and that it should consist largely in the training of those special senses which are necessary for the acquirement of speech, it remains now to suggest some measures for the practical application of the scheme.

How can the early home-education of the deaf child best be accomplished? The first essentials, obviously, are a home and a good mother. The mother need not be especially intelligent, but she must have the mother-love and its natural concomitant, an almost overwhelming desire to help her child. In addition to this, she must have the advice of a physician or teacher who understands the physiology and psychology of child-life and speech-development. The plan that I find productive of the best results is to have the mother witness sample lessons to the child. In these lessons the mother is shown exactly what to do in the intervals between visits. The teacher may construct a pictorial primer for the child and mother, which should be typewritten and made from a plain notebook having detachable leaves. With this primer as a guide, the mother may learn to do much of the teaching nearly or quite as well as an expert.

In the absence of a suitable home and a mother with the ability and inclination to help her child, individual homes and governesses should be procured for deaf infants, and when this is not possible and as a last resort, institutions may be provided, in which very young children may be helped to acquire speech before the school age.

Institutional treatment, however, is preferable only for the defective deaf, or those who should remain in institutions and have custodial care during their lifetime. The otherwise normal deaf child should be educated as far as possible with hearing children and in the environment in which he must live. This early home instruction, followed by day-school instruction, after the school age, would not only be far more helpful to the child, but it would serve as an important measure for the prevention of the deafness which results from intermarriages of the deaf.

SUMMARY AND CONCLUSIONS.

Deafness in childhood should be diagnosticated at the earliest possible moment, and the special sense training preliminary to the acquirement of speech should at once be instituted.

The normal child acquires speech before the school age, thus establishing this period as the physiological one for the development of speech. It is the period during which inherited tendencies to speak, amounting almost to an instinct, begin to manifest themselves and make the acquirement of speech a comparatively easy matter.

The best place for the beginning of this treatment is in the home, and the best teacher is the mother working under the direction of an expert. The otherwise normal deaf child should, if possible, be kept in the home during his entire school education, in order that he may have the advantages which accrue from association with his hearing fellows, and also that he may avoid the intimate associations which frequently result in marriage with his kind.

1627 Walnut Street.

THE INADEQUACY OF THE DRAINAGE SOMETIMES OBTAINED BY THE ORDINARY MYRINGOTOMY IN ACUTE OTITIS MEDIA AND A METHOD OF OVERCOMING THE DIFFICULTY.*

DR. ROBERT LEWIS, NEW YORK CITY.

Four years ago I was called to attend a gentleman of over 65 years of age, who was suffering at the time, and had been suffering for a number of weeks, from a virulent type of acute purulent otitis media. He was also afflicted with diabetes mellitus. Previous to my being called to attend him, he had been under the care of two of my confreres, and had been seen by a third in consultation. All had agreed that a mastoid operation was imperative. The patient and his regular medical adviser refused their consent as, in their opinion, the proposed operation, because of the patient's diabetic condition, involved a much greater danger than that which was to be feared from the possible further extension of the aural disease.

On examination of the involved ear I found the external auditory canal stenosed to some extent, the upper posterior cutaneous canal wall sagging and the drum membrane bulging, very thick, and edematous. In the mid-posterior portion of the drum membrane was a small teat-like perforation, through which the pus escaped from the tympanic cavity with difficulty. Tenderness of the mastoid process and some edema of the overlying tissues were present. I agreed with those who had previously taken care of the patient that a mastoid operation seemed to be the only procedure that was logically called for; but, as neither the patient nor his physician was willing that this operation should be performed, there remained nothing for me to do but to establish good drainage from the middle ear through an opening in the drum membrane. And here I should state that paracentesis of this membrane had already been made on at least three different occasions before I saw the patient, and mine, therefore, made the fourth. The incision which I made was very extensive, beginning under the anterior fold of the drum membrane, and extending around the circumference of the membrane, to and through the posterior fold and through the sagging portion of the canal wall.

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*Read at the meeting of the Ninth International Otological Congress, Boston, August 14, 1912.

On the day after I had made this incision the drainage was free, but on the following day I found that the perforation, because of the edematous condition of the drum membrane, had so nearly closed that the purulent secretion could no longer escape freely. I then decided that an opening of a different nature would have to be made in the drum membrane. It seemed to me that nothing short of an excision of a fairly large portion of this structure would afford an opening of the desired size and of the desired degree of permanency; and such an excision I made by removing the lower and middle posterior portion of the drum membrane with the aid of Hoffman's middle-ear punch forceps. The results were very satisfactory. The discharge, which was profuse, escaped very freely, and it was found very easy to bring into contact with the inflamed mucous membrane of the middle ear such remedial solutions as have the power of thoroughly cleansing and of stimulating the parts.

After the lapse of a few weeks, the patient was able to leave for Europe; the discharge at this date did not exceed a few drops during the twenty-four hours and the perforation was no larger than a mere pin-hole. I later learned that the discharge had stopped before he landed in Europe.

In common with my confreres, I have seen cases of acute purulent inflammation of the middle-ear complicated with mastoiditis, in which all the classical symptoms of the mastoid complication were present in a most pronounced form, in which an operation was advised and even urged, and in which the patient, after refusing to submit to the proposed operation, had ultimately recovered without such interference; but in all the cases of this character that have come under my observation, the discharge, though profuse, has had a free exit through an opening in the drum membrane, which structure, however, was not markedly edematous. On the other hand, in the case which I have just briefly narrated, the edema was so marked that a simple incision gave vent to the retained inflammatory products for a short time only; thus necessitating the adoption of some measure which would establish, for a longer period, a much broader outlet. The procedure which I have described above is the only one, so far as I can see, that offers a reasonably strong prospect of furnishing such a material increase in the diameter of the drainage outlet, viz. an opening of about 3x4 mm.

In the four years that have elapsed since this patient was under my care, I have had twenty-two cases of a similar character. i. e., cases in which the edematous swelling of the tympanic membrane was so great as to interfere seriously with drainage from the middle ear and to render abortive every attempt that I made to improve the condition by merely incising (no matter how extensively) that membrane. In all of these cases I resorted to the use of Hoffman's middle-ear punch forceps for removing a portion of the drum membrane, and in eighteen of the cases recovery took place without the necessity of opening the mastoid cells. Furthermore, as regards these eighteen cases, I feel quite confident that, if I had not resorted in each instance to this method of draining the diseased middle ear, the mastoid operation would have eventually become imperative. I might add that in only one of these cases did the perforation in the drum membrane fail to close.

In conclusion, permit me to emphasize the fact that I advocate the adoption of the method herein described only in cases in which it becomes evident, after the lapse of a reasonable period of time, that the usual myringotomy, because of the agglutination of the edges of the incision, can not be trusted to furnish the needed freedom of drainage.

48 West Fortieth Street.

The Physio-pathologic Relations Between the Hypophysis and Various Chronic Affections of the Naso-pharynx and the Sphenoidal Cavities. CITELLI, *Ztschr. f. Laryngol., Rhino u. ihre Grenzgeb.*, Band 5, Heft 3, 1912, p. 513.

The writer found in five cadavers, where adenoid vegetation was present, hypersecretion and hyperplasia within the central hypophysis; the latter changes in the hypophysis were missing in cadavers where adenoids were not present. In adenoids and other affections of the naso-pharynx as well as in diseases of the sphenoidal cavities, clinically a psychic symptom complex of impairment or loss of memory, aprosexia, intellectual torpor and somnolence is frequently met. These symptoms probably originate in the hypophysis, since the latter, in the presence of a congenital or acquired disposition, may be pathologically influenced by affections of the naso-pharynx and the sphenoidal cavities. Treatment of the hypophysis (pituitin tablets) alone or combined with local or operative treatment of the conditions mentioned above will alleviate these symptoms. GLOGAU.

CASE OF CAVERNOUS SINUS THROMBOSIS OF OTITIC ORIGIN, WITH RECOVERY.

DR. H. R. JOHNSON, FAIRMONT, W. VA.

In the June number of the *Annals of Otology,* Adair-Dighton, of Liverpool, in reporting a case of cavernous sinus thrombosis, with recovery, in his opening paragraph, makes the following statement: "In looking over the literature of cavernous sinus thrombosis as far back as 1883, though I have found some fifty cases of the disease reported, I can find no mention of a single case ending in any other way but fatally."

I wish to report a case of cavernous sinus thrombosis of otitic origin, with recovery, occurring in my practice: John W., aged 59, glass-blower, was operated on by a general surgeon, July 10, 1909, for acute mastoiditis following acute purulent otitis media. For one week following the operation the progress of the case was favorable.

July 18, patient had distinct rigor followed by profuse sweat. Temperature rose from 99.2° to 104.5° and remained up four hours, and came down to 99.5°; 10 a. m., following day, had another chill and temperature jumped to 105°, pulse to 108. This condition continued until July 22, when I was asked to see the case in consultation. I found patient presenting the appearance of acute sepsis, with a mastoid wound in apparently healthy condition except discolored bare bone over the sigmoid sinus. In the left eye there was decided chemosis, and congestion and drooping of the upper lid, also protrusion of the globe. There was a purulent synovitis of the right knee joint. Careful physical examination failed to reveal any trouble in any other organs.

Diagnosis was septic thrombosis of sigmoid and cavernous sinus. Immediate operation was urged, which, for family reasons was deferred until following morning. That night another chill occurred, temperature jumped to 105.5°. On morning of operation the eye was protruding markedly with intense chemosis and ptosis, with deep bluish discoloration of the skin of both eye-lids from venus engorgement. Ophthalmoscopic examination showed a marked optic neuritis; vision reduced to dim light perception. Patient was in stupor but when aroused could answer questions, intelligently, but in hesitating manner.

Operation, July 28, 1909: Original mastoid wound opened and cleared of all granulations; and some necrotic tissue found at tip and in zygomatic cells; bone overlying the sinus was removed from the knee, down to as near the bulb as I could go. Sinus wall had dull gray appearance and was boggy on pressure. An incision 1¼ inches long was made in it and found to be full of dark, disintegrating clot, with no hemorrhage from either end.

Temporary dressings were now applied to mastoid wound and I proceeded to expose and ligate internal jugular vein; ligature applied below the thyroid and above the facial branch, and vein resected. The vein below this point seemed to be healthy, while that above was inflamed, but contained fluid blood, up to the facial branch. Curetted the upper end of the vein up to bulb and from above downward from the sigmoid toward bulb, but got no flow of blood. Put sutures in neck-wound but did not draw the lip of wound together; inserted rubber drainage-tube in upper and lower angle of wound, meeting in the middle. Attention was now directed to the upper end of sigmoid sinus, which was uncovered to within ¾-inch of the torcula and curetted to the torcula, with no flow of blood.

In both ends of the sigmoid, a loose gauze drain was introduced and usual dressings applied, and patient returned to bed with very slight prospects of recovery.

The right knee-joint was opened the following morning by the surgeon who had charge of the case, and about three ounces of greenish-yellow pus discharged,—this through drainage, etc. Made rapid recovery.

The neck wound began to suppurate on fourth day. Pus showed streptococci, but under irrigations and free drainage, healed in four weeks. The mastoid was slow in healing, taking over eight weeks. There was chill, five hours after operation, which was the last. Temperature varied from 100° to 102° for over three weeks, but was normal and remained so after fourth week. The chemosis, ptosis and bulging of the globe gradually subsided, but vision was entirely lost due to post-neurotic optic atrophy. Patient left hospital eleven weeks after operation, having made complete recovery, and is living at the present time.

People's Bank Building.

NYSTAGMUS PRODUCED BY GALVANISM OF INDIVIDUAL SEMI-CIRCULAR CANALS.*

DR. LESTER M. HUBBY, NEW YORK CITY.

Although Galvani first noticed the phenomenon of the electrical current named after him in 1780, and Volta invented the first galvanic cell in 1799, it was not until the middle of the following century that the physiological effects upon the head were particularly noted.

Duchenne of Bologne,[1] and Remak of Prussia, in 1869, found that the current applied to the region of the head or face caused flashes of light, *dizziness,* metallic taste, noises in the ears, and a *tendency to tilt the head to one side.*

Poore,[2] in 1876, wrote: "It was once a matter in dispute, but is so no longer as to whether or no the brain could be influenced by currents.

"If the reader will take the two rheophores of a galvanic battery, and place them on either side of the head, and gradually and very cautiously increase the current, he will first feel a fullness of the head, then giddiness, and lastly, if the current be too strong, will stagger and fall."

In 1873, Hitzig[3] wrote that on passing the galvanic current through the back of the head, at the moment of closing the circuit the patient fell towards the anode and both eyes turned with spasmodic rolling movements towards the cathode.

In 1900[4] it was taught that the nystagmus, the tendency to fall towards the anode, the conjugate deviation of the eyes, etc., induced by galvanism were due to the production of catelectrotonus of one cerebral hemisphere and of anelectrotonus of the other cerebral hemisphere.

In 1906[5] it was thought possible that galvanic nystagmus was due to influence of the current on the semi-circular canals.

A few years later, Neumann found that galvanic nystagmus could be induced in an individual whose semi-circular canals had been totally removed. He therefore claimed that the phenomenon was due to stimulation of the vestibular nerve or centers.

To demonstrate that each semi-circular canal (through its crista) can be galvanically stimulated to produce its particular type of nystagmus, is the purpose of this paper.

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*Presented as a candidate's thesis to the American Laryngological, Rhinological and Otological Society, Philadelphia, May, 1912.

For greater clearness a few of the electrical principles involved are here stated. Body resistance to the passage of the current is modified by the following conditions: 1. A thick, dry, cold skin offers greater resistance than a thin, warm, moist skin. Therefore mucous membranes offer less resistance than the skin. 2. Small or inefficiently applied electrodes show a high resistance. 3. The lower the electromotive force of the current the greater the resistance. 4. The duration of the test affects the resistance by the hyperemia and moisture induced in the skin.

Resistance is calculated by dividing the voltage by the strength of the current expressed in amperes. The passage of a galvanic current through a nerve produces a state of electrotonus, in which there is altered irritability and conductivity. Near the cathode (catelectrotonus) the condition of nerve irritability and conductivity is increased. The reverse is true near the anode and the condition is called anelectrotonus.

The first problem was to discover whether there were any points on the skin or mucous membranes of the head of a normal individual where galvanism could produce the different types of vestibular nystagmus. In this experiment ordinary sponge electrodes, 5 cm. in diameter, except when otherwise specified, were used. Every possible combination of the following points of application of the cathode and anode were made,—on the tonsil, at the Eustachian isthmus by means of Duel's gold Eustachian electrode, at the vertex of the head, at the temple, in front of the tragus, in the external auditory canal with a special small sponge electrode, over the mastoid antrum, immediately below the mastoid tip, and in the palm of the hand.

The results were negative. The type of the nystagmus was the same in each individual wherever induced. It was always either rotary, horizontal, or intermediate between these two. Only one of these three types occurred in each one tested. Bárány[6] believes that rotary-horizontal nystagmus is the type most easily produced by all forms of vestibular stimulation. He observed that it occurred after unilateral destruction of the labyrinth, after galvanic stimulation of the vestibular nerve, in all spontaneous attacks of vertigo, and usually following sudden head-movements.

The best places for application of the electrodes to produce nystagmus with the lowest milliamperage were found to be the Eustachian isthmus, the external auditory canal, in front of the tragus, and over the mastoid antrum. The results were greater with the electrodes on two of the above spots than with one in the hand.

The resistance was noted and found to vary from 10000-24000 ohms in one, and from 6000-25000 ohms in another individual, according to the points of electrode application. The electro-motive force required in the first individual varied from 10-24 volts, in the second, from 6-25 volts, to bring the current up to 1 milliampere. The lowest resistance was encountered at the Eustachian isthmus and the next lowest at the tonsil.

The strength of current needed to produce nystagmus when the current was applied as above indicated varied from 2-9 milliamperes or an average of 4½ milliamperes. G. W. Mackenzie[7] found the average to be 4 milliamperes. He also found that in a normal individual the milliamperage necessary to produce nystagmus in the two ears should not differ more than 1 milliampere.

Various nystagmographs have been devised. Wojatschek, Buys,[8] and G. Gradenigo[9] report successful nystamograms. Buys claims that he can get good records with a current of 3 milliamperes. If a practical instrument could be devised for this purpose the slight variations from the normal could be studied more accurately and with less discomfort to the patient.

The second problem was to discover whether there were any points in the tympanum, the aditus, or the mastoid antrum, where galvanism could produce the different types of vestibular nystagmus.

The tests were tried on a man seven days after a radical mastoid operation had been performed on the right side. The skin flap had not been made, on account of dural exposure from erosion of the tegmen tympani, and sigmoid sinus exposure from a like erosion over its descending portion in the mastoid process. Before doing the plastic work the tests were made with the patient under ether anesthesia, the head lying on the left side. The eyes were closely observed by three other physicians during the application of the electrodes by the operator.

As the internal diameter of the osseous ampulla of a semi-circular canal is 1½-2 mm. and the distances between the centers of the ampullae about 2-2½ mm. to concentrate the current upon one ampulla exclusively suggested the use of an electrode of about 1 mm. in diameter. Gold electrodes insulated nearly to the tip were used.

To avoid stimulating more than one canal, it seemed probable that the use of two electrodes applied over their external walls would be more successful than the application of one electrode over the canal and the other electrode in front of the tragus. This assumption proved to be incorrect. No nystagmus was produced, no matter where the electrodes were placed in the neighborhood of the semi-circular canals, notwithstanding the fact that the facial nerve reacted to the current. The strength of the current used varied from 0-10 milliamperes.

The next experiment consisted in applying the 1 mm. cathode to the various canals and the anode (a moistened sponge electrode 5 cm. in diameter) to a point in front of the tragus of the ear on the same side of the head. On application directly over the horizontal semi-circular canal there was a strongly marked slow movement of the eyes horizontally to the left. This movement was the slow vestibular component of the nystagmus.

On application of the current at about the junction of the tegmen of the aditus with its internal wall vertically above the horizontal canal, there was a slow movement of the eyes to the left and upwards. On applying the cathode to a point a few millimeters posterior and a few millimeters below the external semi-circular canal there was a slow movement of the eyes directly upwards but the excursion of the eyes was not so great as in the stimulation of the superior and external canals. These applications were repeated several times with uniform results.

One week following the plastic operation and two weeks after the original radical operation the tests were repeated in the same manner without anesthesia. The position of the head was vertical during this test.

Three distinct types of vestibular nystagmus were produced: (1) Horizontal nystagmus to the right occurred on catelectrotonus of the right horizontal canal; (2) rotary nystagmus counter clockwise resulted from stimulation of the right superior canal; and (3) vertical nystagmus upwards on stimulation of the posterior canal.

The cathode was also applied between the oval and round windows, posterior to the pyramid. Nystagmus vertically upwards resulted. The ampulla of the posterior canal is near this region and may explain the result, though our knowledge of the effects of stimulation of the maculae acusticae of the utricle and saccule is lacking.

The strength of current required to produce nystagmus in this experiment, so that it was noticeable to the eye, was 4 milliamperes when applied over the various canals. When applied to the internal wall of the tympanum posterior to the pyramid, nystagmus resulted with a current of only 1⅕ milliamperes. Contrasted with this, 8 milliamperes were required to produce nystagmus with the cathode in front of the tragus and the anode in the hand, using the 5 cm. sponge electrodes.

Conclusions: The nearer the electrodes are placed the more superficial the penetration of the current. This explains the absence of nystagmus in placing both electrodes over the canals within two or three millimeters of each other.

Although the current penetrated deeply enough to cause reactions of the facial nerve (the posterior meatal ridge having been lowered as far as possible without direct exposure of the nerve) it did not reach the cristae in sufficient density to produce nystagmus. In placing the electrodes three to four cm. apart (cathode at each canal, anode anterior to tragus) the depth of the penetration of the current was sufficient to cause stimulation of the cristae.

The smaller the electrodes, the denser the current, the greater the resistance, and the greater the production of heat. It might be thought then that the nystagmus produced by the application of the small electrodes to the canals, might have produced the nystagmus by the production of heat over the canals, and therefore be simply the caloric reaction. This cannot be true since the resulting galvanic nystagmus did not correspond in type with that produced by caloric means. For the nystagmus produced by catelectrotonus of the external semi-circular canal corresponded to the application of cold, not heat, to the aural canal of the same side when the head was bent over the left shoulder 90°. In this position the arch of the external canal is highest and the ampulla is below, being mesad, —the current of the endolymph would therefore be towards the ampulla and the utricle, on the application of cold.

The nystagmus produced by catelectrotonus of the right superior semi-circular canal corresponded to the application of heat to the external auricular canal of the same side with the head erect, not bent to the left 90° as in the experiment.

In like manner the nystagmus produced by catelectrotonus of the right posterior semi-circular canal corresponded theoretically to the application of heat to the right posterior semi-circular canal with the head erect, or the application of cold to this region with the head rotated downwards 180°. In the experiment under anesthesia the head was bent to the left 90°, not held erect or bent downwards 180°.

In the experiment without anesthesia the head was erect and yet the type of nystagmus was not altered, except in stimulation of the posterior canal.

The explanation of the different results obtained over the posterior canals, with and without anesthesia, requires further experimentation.

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27 West Sixty-Eighth Street.

CASE OF FIBRO-ANGIOMA OF THE TONGUE.

DR. D. MACFARLAN, PHILADELPHIA.

J. D. aged 72, complained of "catarrh" of the nose and throat for many years. Examination showed a chronic congested pharynx, posterior wall studded with granulations; fauces, soft palate and uvula congested; nares sclerotic and dry.

At the base of the tongue on the left side there was a pedunculated growth about the size of a chestnut. It was readily snared off, the stump giving but little bleeding after touching with silver. The mass was of elastic and moderately firm consistency; rather coarsely lobulated, yellowish-gray in color and with the surface covered by a thin irregular, yellowish-gray, finely granular layer of tissue.

Microscopic examination: Section showed a mass of loose edematous meshwork of fibrous tissue very rich in large and small lymph and blood spaces. There were a moderate number of leucocytes chiefly poly-infiltrated through the fibrous meshwork. Myxomatous cells were few. The surface of the section was covered by normal epithelium and elsewhere by a thick layer of necrotic tissue, much fibrin and pus cells. There were no signs of malignancy whatever. Diagnosis: Fibro-angioma of the tongue, infected.

Strange to say, the patient was scarcely concious of the presence of this mass. He first noticed it as a lump in his throat seven or eight years ago, yet in all the intervening time it never bothered him. He had frequently been under treatment for his nose and throat condition, but in some way the tumor had been overlooked.

1805 Chestnut Street.

NEW INSTRUMENTS.

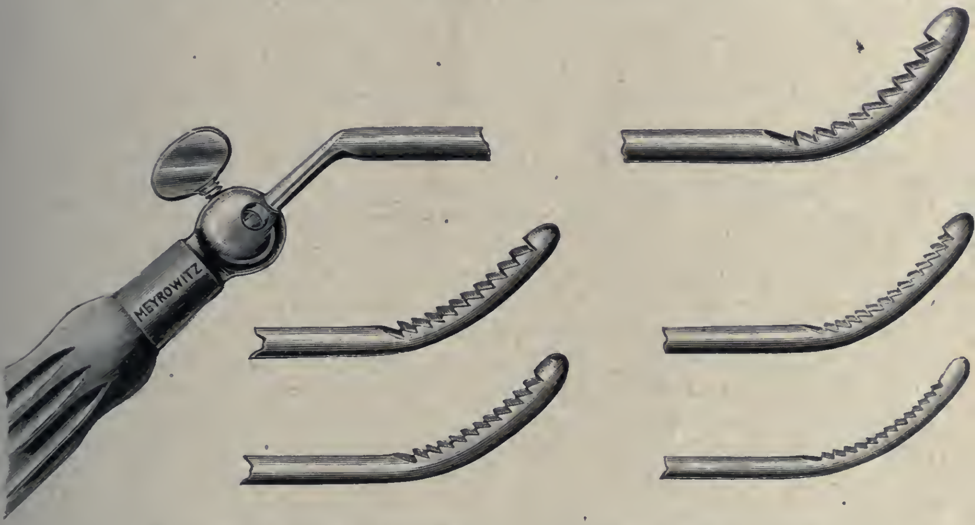
DR. J. J. SULLIVAN, JR., SCRANTON, PA.

My only excuse for this article is that I have had many letters asking for more detailed description. I claim no originality—I have only succeeded in completing the technic of a simple, safe operative procedure—one that gives results with the least traumatism to nasal tissue. I am only following the idea of Goode, using instead of his instruments, a series of dilating rasps (see cut).

Technic of Operation: 1. Remove enough of the middle concha to see the hiatus and bullae. 2. Re-cocainize this part (Freer method). 3. Pass No. 1 rasp as you would a frontal probe. 4. Draw rasp downward and forward. The rasp cuts anteriorly only and should not be used with a sawing movement, (i. e., up and down). 5. Nos. 2, 3, 4, and 5 are now used as above described until an opening large enough has been made into the sinus.

Cases with closure of front-nasal duct or inability to pass probe or rasp into the sinus: 1. X-ray plate before operation. 2. Removal of the uncinate process with a Meyer ring curette or a Burrell nasal shave. This enlarges the gutter by removing its anterior wall. 3. Passing of rasps as above described. 4. Cut away loose shreds, etc., making a clean-cut wound. We all know that a number of acute frontal sinusitis clear up with intra-nasal treatment or removal of a small part of the middle concha. Knowing this I have secured drainage very often in the more obstinate cases by making the frontal cut into the middle concha as for anterior removal and then infracting the same. After infraction the No. 1 to 3 rasp is passed and the nasal frontal duct dilated enough to give drainage. Several days after the rasping or complete operation a twenty per cent solution of argyrol is introduced into the frontal sinus two or three times a week till the wound is healed. The rasps are about 2 to 4 mm. in diameter.

In intra-nasal operations on the antrum of Highmore I do not remove the inferior turbinate. I make the anterior cut and infract the inferior concha thoroughly. It is surprising, even in a narrow nose, how easy it is to remove the whole lower wall between the antrum and nasal cavity. The only part of the bone that I do remove is its inferior border and that only if it is in too close contact with the nasal floor. However, we must remember that without perfect nasal drainage no operative procedure will clear up in the majority of cases of sinus condition. If a deflected septum, nasal hypertrophies, adenoids, etc., are present there will be kept up a constant source of irritation and recurring infection that could hardly be cleared up even per radical. No one would think of trying to get results in a catarrhal middle-ear condition without cleaning up any great nasal abnormalities, yet a good many of us will go on treating sinus inflammations where the ventilation and drainage of the nose are imperfect, expecting to get results. It is often a case of putting the cart before the horse.



Local Anestheties in the Upper Respiratory Tract Including the Adrenalin Preparations. J. W. FREUDENTHAL, *Med. Rec.*, July 20, 1912.

The author mentions the various drugs employed in producing local anesthesia and in treating operative lesions of the upper-air passages, and calls our attention to some fatal cases resulting from the hypodermic uses of adrenalin in its strong solution and in combination with cocain.

While adrenalin solutions in weak solutions are valuable adjuncts to our therapeutic armamentarium, we must be very cautious in using the 1-1000 strength for hypodermic medication.

LEDERMAN.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular Meeting, May 22, 1912.

JOHN F. MCCOY, CHAIRMAN.

A Case of Nasal Deformity Corrected by Auto-implantation of the Septal Cartilage. By OTTO GLOGAU, M. D.

Mr. M., 20 years of age, was referred to me by Dr. Fritz Neumann, on February 27, 1912. Previous history: Patient fell and broke his nose four years ago; disfiguring saddle nose. Since that time he was unable to breathe through the nose; but the visible deformity was his only reason for presenting himself for treatment.

Present condition: Patient is in perfect health except for the nasal trouble and its immediate consequences. He presents a typical saddle nose with the special feature of the tip of the nose projecting more conspicuously than usual. Intra-nasal examination reveals a multiple fracture of the cartilaginous septum with the convexity of the deviation towards the right side. The bony septum is also deviated towards the same side. The uppermost part of the cartilaginous septum consists exclusively of mucous lining, the cartilage having been pushed downward by the injury.

Therapy: As the patient had an unsuccessful paraffin injection a year ago, another therapy had to be tried. The patient would not consent to have the deformity corrected by Carter's method of transplanting a part of the rib. It occurred to the writer to correct the nasal obstruction and external deformity simultaneously by implanting into the gap a part of the cartilage removed intra-nasally.

Operation: (Dr. Shrier assisting). The septum was prepared as for submucous resection, by applying to the Schneiderian membrane a twenty per cent cocain solution and a 1.5000 adrenalin solution with cotton pledgets. The usual incision was made on the right side, but the knife was carried right through the cartilage towards the mucous lining of the left side without, however, injuring the latter. The cartilage was then elevated from the mucous lining on the left side and by means of a strong pair of scissors an incision was made at its upper and lower margins. The cartilage flap, covered by the mucous lining of the right side, was thus attached at its posterior part only. The nostrils were now plugged with a piece of cotton and the back of the nose cleaned aseptically. A one-half per cent cocain solution, containing a few drops of adrenalin was then injected hypodermically at the middle of the nose towards the tip. A transverse incision of about 15 mm. was then made at the lower end of the nasal bones. Through this incision, by means of a knife, the subcutaneous tissue was separated along the back of the nose down to the tip. A sharp spoon was introduced into this pocket and the cartilage at the tip of the nose curetted. The external wound was covered with a piece of gauze. The cartilaginous flap was severed from its posterior attachment and put into a physiological salt solution. By means of a Bier's skin-grafting knife, the superficial epithelial layers of the mucosa were removed, and the cartilage, covered by its perichondrium, shaped by means of a pair of scissors to fit into the deformity. The cartilage was inserted into the deformity and the transverse incision closed by catgut stitches.

The wound was covered by a small piece of iodoform gauze and adhesive plaster. The mucous lining over the bony part of the deviated septum was elevated on both sides and the bony deviation removed by the writer's submucous saws. The septal mucous lining of the left side remained intact, while on the right side there was a loss of substance corresponding to the piece of cartilage removed with its right side mucoperichondrium. The nasal cavities were painted with a ten per cent oily solution of iodin and packed in the usual way.

The intra-nasal packing was removed after forty-eight hours, the dressing of the external wound changed every day. After the fourth day the catgut ligature began to suppurate and the wound opened again. Healing by secondary granulation took place, leaving a somewhat conspicuous scar, which would have been linear by applying silkgut. The inserted cartilage became permanently attached and the deformity may now be considered as corrected.

New Operation for Depressed Fracture of the Nose Using Cartilage Intra-nasally. By F. S. Lovell, M. D

J. D., age 20; book-binder and amateur boxer. On the last day of November, 1911, he was struck on the nose, which fractured it and flattened it down on the face. The next day he went to one of the city hospitals, where a diagnosis of fracture of the nose was made. This was followed by a septal abscess, which was operated upon, irrigated, and drained with iodoform gauze. This was continued for two weeks and the wound was then allowed to heal, and the patient discharged. He was not seen again until March 1, when he again appeared, complaining that he could not breathe through the nose. The nose was very much depressed, septum thick and bulging on either side and in contact with external wall of nose, and a submucous resection was recommended. This was performed on March 9, in the usual way. On resection, it was found that there was no cartilage in the nose at all, but only fibrous tissue infiltrated. In studying the operation it was at first intended to do the two operations at one sitting, taking out the cartilage, re-inserting it under the soft parts, and raising the depression, but as no cartilage was found in his nose he was treated in the usual way, for the septum resection only. One week later another patient requiring resection of the nasal septum was operated upon, the cartilage thus removed from this man was used to correct the deformity in patient No. 1.

Atfer injecting the patient with adrenalin, 1 dram, cocain, one-half grain, and distilled water to make one ounce, two drams of this solution being used, incision was made in the upper part of the vestibule of the nose a half inch back, dissecting up the soft parts, and after shaping the cartilage which was removed from the other patient and which had been kept in a saline solution, it was slid through this opening and put in place from the point of the deformity above to the tip of the nose. One suture was taken to close the wound in the nose. No dressing. The patient was sent home, no inflammatory action followed, very little swelling, and the good results can be seen.

The second patient had an injury to his nose fourteen years ago, by being hit on the nose with a stone, driving it to the right and depressing it. In this instance the operation was done which was at first intended with the other, by removing his septum in the usual way and at the same sitting using it to correct the nasal depression. He could not breathe through his nose before operation. This was found to be insufficient. During the week, a submucous resection was done on another patient. This cartilage was kept in saline for a few days and then inserted through the same incision in patient No. 1 and the result as you can see is very satisfactory.

Cases Showing the Results of Treatment for Laryngeal Stenosis. By H. L. Lynah, M. D.

The patients presented were types of chronic laryngeal stenosis following diphtheria:

Case 1: This boy was admitted to the Willard Parker Hospital, January 6, 1904, and intubated for laryngeal diphtheria. He had worn an O'Dwyer tube for seven months, then remained without the tube for two weeks, but gradual closure during this interval necessitated re-intubation, which was unsuccessful, and tracheotomy was performed in order to save his life. The tracheal canula was worn for three days, when it was removed—the patient intubated with one of my "special" tracheal dilatory tubes, and the wound allowed to granulate. After the tracheal fistula healed, the dilatation was kept up for a period of seventy-eight days, after which time the patient was able to remain without the tube, and has been without the tube ever since, for a period of eight years. He has a fairly good voice, though of deep quality.

Case 2: Boy, 4½ years of age, admitted to the Willard Parker Hospital, July 10, 1908, and intubated for laryngeal diphtheria. He had worn an O'Dwyer tube and also had been treated by my dilating tubes for a period of eighteen months, without success. The condition which caused this prolonged intubation was due to polypoid hypertrophy at the ventricular bands and slow, gradual hypertrophic contraction. A laryngotomy was advised at this stage to dissect out the hypertrophied tissue, which I may add is next to impossible, owing to the friability and vascularity of the membrane. However, the polypoid tissue and strips of the hypertrophic membrane were removed, the whole surface touched with nitrate of silver and the fissure closed about one of my bridge tubes. The wound did not heal by primary union, but became infected, and healed by granulation, leaving a dense scar.

This operation is unquestionably not the proper procedure in the treatment of these cases, and I have abandoned it as futile, for a pure cicatrix is added to the already complex pathology. Both cases had spasms of the adductors, and were also treated by the narrow neck abductor tube. They have fairly good voices, but the voice of a cicatrix type is never as good as those treated by dilatation, for the scar when contracting pulls the cords out of place and the voice may be lost, from failure to approximate.

Two other cases were then presented which Dr. Lynah said were still under observation. He did not consider them cured, for he considered no case cured until the patient had remained without the tube for a period of one to two years. These cases had been without the tubes for a month and a half. Both were extreme grades of hypertrophic contraction and had worn tubes for four and a half years.

Case 3: A little girl of 7 years was admitted to the Willard Parker Hospital October 27, 1907, and intubated for laryngeal diphtheria. She has worn the tube ever since and was only able to remain without it for an interval of one to two weeks, when owing to gradual contraction re-intubation was necessary. She has been treated by enormous dilatation during the past year. There has been no adductor spasm, and she was never treated by the abductor tube. She has a better voice than the two cicatrix cases, the voice being almost normal.

Case 4: The other patient, a girl of 16 years, was admitted to the Willard Parker Hospital, December 2, 1907, and intubated for laryngeal diphtheria. She had marked adductor spasms, and was treated by the narrow neck tube. There has been a slight amount of dyspnea for the last week, though it did not seem to be progressive. She has a husky voice—the right vocal cord being attached to the ventricular band, the left cord is free and an absolutely normal cord.

I will now give a brief classification of these cases as I have observed them during the past eight years: 1. There is a neurotic element which predisposes to spasm, and the spasm may be so violent that it makes extubation extremely difficult. When the tube is finally removed, this violent spasm necessitates immediate re-intubation.

2. The spasm type without nervous element. This is due to the long-continued use of the tube. The tube virtually acting as a splint to the intra-laryngeal muscles, holding them in a state of fixation or functional disuse. The abductors being held apart for so long a time the balance of power is exerted by the opposing set of muscles, and we have adductor spasms. There is no recurrent laryngeal nerve involvement, and therefore, no paralysis. The muscles show some myocytis, but to very slight degree. The nerves, both the trunk and muscular branches, are normal.

3. The polypoid type which occurs at the base of the epiglottis and ventricular bands. These polypoid outgrowths fall together as the tube is removed and immediate re-intubation is necessary. This type simulates the spasm type.

4. The hypertrophic type. The stenosis is slow and gradual. The chief site of the contraction is at the cricoid level but the entire lumen of the larynx and trachea may be involved.

5. The cicatrix type, which is due to traumatic or surgical interference.

6. The atrophic type, with the formation of thick, sticky muco-crusts which obstruct the larynx.

The primary cause of the whole trouble was due to the diphtheritic inflammation and Dr. Lynah mentioned eight cases of diphtheritic croup which had to be intubated ten days after the croup had disappeared, owing to a slow and gradual contraction of the infiltrated laryngeal mucosa and sub-mucosa.

Removal of a Foreign Body From a Bronchiectatic Cavity. By SIDNEY YANKAUER, M. D.

Dr. Yankauer said that in all the cases of foreign body which he had presented to the Section, and in fact all the cases which had been reported in literature, it was known beforehand that a foreign body had been inhaled, and the examination had been made for the purpose of removing it. In most instances it was of a familiar nature, and the operator knew what to look for, having a definite idea of what was to be expected within the bronchoscopic lumen. In other instances, the X-ray had showed the location and position of the foreign body, and in one case which he had presented some months previously, where a safety-pin had been inhaled, the knowledge gained by the radiographic picture had been indispensable.

In removing the foreign body in the case now reported, however, all of these advantages were absent, for the patient did not know that he had inhaled anything, and even when it was removed and shown to him he could not recall the accident. The radiographic picture also failed to show any shadow that could be interpreted as a foreign body.

The patient was 67 years old, and said that last December he became very hoarse, and began to cough. The sputum rapidly increased in quantity, until he coughed up large quantities, and had pain in the right lower chest; he then began to have daily chills and fevers, with sweating. He was admitted to the medical service of Dr. N. E. Brill at Mount Sinai Hospital, and a tentative diagnosis of empyema was made. The chest was aspirated but the result was negative; the Wassermann test was negative, as were also the tuberculosis tests. The amount of sputum was about 200 ccm. per day.

Dr. Yankauer said that during the last year the internists had accorded him the privilege of bronchoscoping the bronchiectatic cavities in all their cases, and he had been permitted to make such an examination in the case of this patient. The man was given a hypodermic injection of morphin and anesthetized with cocain and placed on the table; the passage of the bronchoscope was easy. Pus was observed pouring out of the right bronchus; he coughed up such quantities of pus that the suction apparatus was of no use. After this had continued for a few minutes, it ceased, as the bronchus was emptied. The bronchoscope was advanced to the bottom of the right bronchus, where something was seen with the appearance of sloughing granulation tissue. This was seized with the forceps and withdrawn, and placed on a sterilized towel. Examination of what was removed showed that it was mostly pus, with a very tiny piece of solid tissue. A second attempt produced another attack of coughing, and he again coughed large quantities of pus. The bronchoscope was finally advanced into the lowest terminal branch of the right bronchus, the end being 35 cm. from the upper teeth. From the view obtained, it was evident that we were dealing with a foreign body, so the entire mass was this time seized and drawn up. On removing it from the mouth, the mass broke in two, but the part which dropped was recovered. The smallest piece was first removed, the second piece remained in the forceps, and the largest piece was the part which broke off and was recovered. Examination proved the foreign body to be part of a chicken bone.

The bronchoscope was then again introduced into the bronchus and a careful examination was made. There was a secondary ulceration all around the wall of the bronchus where the foreign body had lain. The patient recovered without difficulty, and twenty-four hours after the operation the temperature became normal, and has so remained ever since. Being quite advanced in age he has not made a very rapid recovery. The flatness of the chest, however, has diminished, he breathes well, is out of bed, and is steadily though slowly improving.

The case was unique in that a foreign body was found and removed when its presence had not been even suspected.

NOTE: The patient was discharged from the hospital three weeks after removal of foreign body. At that time the daily amount of sputum was 10 ccm.

Case of Foreign Body (Instrument) in the Sphenoidal Sinus. By I. M. HELLER, M. D.

To be published in full in a subsequent issue of THE LARYNGOSCOPE.

Tumor of the Hypophysis. By JOHN LESHURE, M. D.

Dr. Leshure said that that although the case belonged more properly to the Section of Ophthalmology, he thought it interesting to present it to-night, as Dr. Voorhees was to read a paper on the subject of "Hypophysis surgery," and the case demonstrated some of the features touched on by the paper.

The patient was 19 years old. There was nothing of interest in his family or personal history, except the fact that his grandmother had had paralysis agitans. He first came under observation on August 15, 1910, complaining of headache following the use of the eyes for near work, and poor distant vision. Examination showed vision 20/40 in each eye, increased to 20/15 in each eye, with a + sphero-cyl. correction. The fields were normal, and the nerve head outlines were slightly hazy. The extrinsic muscles were normal. Examination of the nose showed moderate enlargement of both middle turbinates, and the presence of muco-purulent secretion coming from the middle and post-ethmoidal cells. His symptoms were relieved for a time by wearing glasses, but he began to experience severe headaches about a year ago. Treatment of the ethmoiditis relieved this for a time, and he was not seen again until December, 1911, when he complained of inability to see objects in the right half of the visual field, and severe frontal headache. Vision O. D.=20/70; vision O. S.=20/40. There was complete right temporal hemianopsia, and a general contraction of the left temporal field, varying from fifteen to twenty degrees below normal. Dr. Cushing lays stress upon the interlacing of the blue and red fields in some types of brain tumors, but I was unable to demonstrate this sign in this case. Both optic discs showed signs of atrophy, and the pupillary reaction to light was decidedly sluggish. All the evidence pointed to a chiasm lesion, which opinion was corroborated by an ophthalmologist and a neurologist who saw him in consultation. An X-ray plate made by Dr. Caldwell showed marked enlargement downward and forward of the sella turcica, and at the suggestion of Dr. Jelliffe the patient was referred to Dr. Cushing of Baltimore, for operation. This was followed on the tenth day by a meningeal infection so severe as to jeopardize the life of the patient for several days. After a number of injections of Flexner's serum, recovery took place.

Unfortunately, I have not yet received Dr. Cushing's notes of the case, which were promised, nor the X-ray plates, so that at this point the history is somewhat incomplete.

Several days after a preliminary exenteration of the middle turbinate and ethmoid regions, the extirpation of the hypophysis tumor was undertaken through an incision at the junction of the upper lip with the gums. A submucous resection of the septum was done, subsequent resection of the floor and roof of the sphenoidal sinus giving access to the base of the tumor, which was cystic. Mention has already been made of the meningitis which appeared on the tenth day, evidently following the dressing, and the question arises whether the oral route is not more apt to be followed by infection than the nasal route.

Two or three weeks after returning home, the patient began to suffer from frontal headaches, and returned to Baltimore for a decompression operation, Dr. Cushing believing that the headache was due to meningeal thickening and increased intra-cranial pressure. Since this last operation, the patient has been quite comfortable.

Present examination: Externally, in right temporal region is a large bulging mass, evidently the protrusion of brain and its membrane. The nose is clear, save for a small amount of granulation tisse in the region of the sphenoidal sinuses. Both septal flaps are intact. Both optic discs are slightly atrophic and pigmented on the nasal side. The temporal hemianopsia still persists, but the central vision has risen from 20/70 to 20/30. The fields have varied somewhat on different occasions. The charts made a few days ago show the condition then.

The case was purely ocular in type. Radiographs were made of different bony structures, but no signs of acromegaly were noted.

DISCUSSION.

Dr. Carter said that the two cases presented by Dr. Lovell showed very distinctly the advantages of the re-implantation of living tissue. Of course, they had been operated on in March, and were not of very long standing, and there was some question as to whether the ultimate result would be as good as at present. From what Dr. Lovell said, the deformity must have been considerable, but it is unfortunate that the doctor did not have photographs made before the operation, so that the degree of improvement could be properly estimated. One of the cases was a homoplastic operation, the cartilage being taken from another patient and it was a question whether that would remain. The opinion of the majority of those who have done this work is that tissue removed from one patient to another is reabsorbed.

Another point is that the operation of introducing cartilage into the bridge through the nose is not new, it was done by Dr. Green of Boston, two and a half years ago; instead of using cartilage from the septum, he used it from the rib. In the spring of 1910, in Dr. Harmon Smith's clinic, he himself had used a spur from the patient's nose. In most of Dr. Carter's cases there has been no choice except to take bone from another part of the body, as practically all the cases upon which he has operated had no septum and were cases of extreme deformity, and it was for this class of cases that he devised his operation of rib transplantation.

Dr. Glogau said that in the cases he had reported it was inadvisable to inject paraffin, as the upper part of the cartilaginous septum consisted simply of mucous membrane. He is of Dr. Carter's opinion that autoimplantation is the most logical procedure.

Dr. Leshure asked how long the tube was left in the larynx in the original intubation. He understood Dr. Lynah to say that it had been left in five days. In his own cases it had been very important that that particular time should be observed—four days and six days being ineffective. O'Dwyer found that five days was just the right period; if left in too long, it was apt to cause granulations and paralysis, and if taken out too soon it would have to be reintroduced, with practically the same result.

Dr. Lynah had spoken of the psychic element. Dr. Leshure said that he had a case of a child 14 months old who had been intubated four times, the first time for only three days, and each time the tube was replaced there was more traumatism; the second time it had to be replaced and taken out at once, and after five days it was replaced, but it was impossible to leave it out for more than an hour; the next time, two hours. During that time he noticed that if he came near the child the symptoms and dyspnea increased, due to fright, so he made it a point to have the child removed to another part of the house, and she improved; by gradually lengthening the time she improved until the tube could be left out.

Dr. Gleitsmann said that he had not seen the case when presented, but understood that it was a case of hypertrophic laryngitis. Six years ago he showed a patient to the section upon whom he had performed laryngotomy on account of a general hypertrophic laryngitis, leaving the cords intact. At the time of the demonstration the parts were healed and united, and the patient spoke with loud, but husky voice. Since then he has improved to such an extent, that he is able to teach boys.

Dr. Simpson said that these so-called retention tube cases seem to be much more frequent than formerly, and that it would be interesting to know the percentage. It was easy to determine the secondary causes which necessitate continued intubation, but the exact primary causes have not been thoroughly determined, the type of the diphtheria and traumatism are important factors. Dr. O'Dwyer had laid stress upon those points. Dr. Simpson said that he himself did not think that paralysis was as often the first as the secondary cause. Of course, the constant wearing of the tube would produce hypertrophic tissue.

Dr. Smith inquired how frequently Dr. Lynah removed the tubes, and whether there was not danger of producing a paralysis; he had seemed to minimize this possibility. In cases where he himself had to leave the tubes in place, the trachea had collapsed, showing that where nature's own method has been supplanted the tracheal rings lost their tonicity and failed to act. In one case he tried to leave the larynx open, but the patient refused to let anything remain in the wound, and it drew together again, and he had not been able to find any method of keeping it open. The paralysis seemed to be as dangerous as the cicatricial stenosis.

Dr. Smith said that he had seen the pugilist whom Dr. Lovell had presented on the evening of the day of the injury, and he had then a very good nose, and at the present time it seemed to be like what it was before the deformity.

He felt that in the transplantation of bone there was danger of sloughing and subsequent greater deformity, as there was danger of infection. The submucous injection of paraffin was perfectly feasible in most of these cases. It has been done successfully time and again. It is easy and simple, and does not endanger the other tissues by infection.

Dr. Lynah, referring to Dr. Smith's case, said that in chronic tracheal canulae cases, there was a polypoid hypertrophy about the canula and in the posterior tracheal wall, which completely closed the trachea with a resultant closure of the larynx above from disuse. There is no paralysis and the same condition of functional disuse of the muscle occurs from failure of air to pass through the larynx, and when treated properly the muscle will functionate and return to normal.

On intubation of a case of tracheal fistula the tube will come out of the tracheal wound, unless firm pressure is made at and above the fistula to mash out the posterior hypertrophy, and allow the tube to pass with the trachea below the wound.

He had had two cases from the Manhattan Eye, Ear and Throat Hospital. One of which developed measles and the other diphtheria. Both were admitted to the Willard Parker Hospital as chronic tracheal canulae cases, and after treatment for a month or two, both cases were able to remain without the tracheal tubes and recovered.

Dr. Leshure had asked about the length of time the tubes were worn in the acute diphtheritic stage. Much depends on the amount of antitoxin used during the acute stage. All agree that the larger dosage of antitoxin has shortened the period in the acute stage. At the Willard Parker Hospital in 1905 and 1906 it was customary to leave the tube in for seven days. The time for extubation depended upon the general condition of the patient, though each case seemed to be a law unto itself. Since 1907 the average was from two to four days. The last report from the Hospital showed that the majority was on the second to third day.

Referring to the case spoken of by Dr. McCoy, Dr. Lynah said that it was difficult to get the large tubes in, and he increased the size very gradually—a millimeter at a time, once a week. The tubes were also changed at this time for cleansing. He did not use the metal tubes on account of calcareous deposits which formed on them, but the hard rubber tube would also become very foul if left in longer than one week. He did not consider the case referred to by Dr. McCoy hopeless, as it was of the hypertrophic type and should recover by dilatation, even though the cartilage may have been involved and had undergone bony changes with projections into the laryngeal lumen. The only way to cure such cases is to dilate them to the limit.

In answer to Dr. Simpson, Dr. Lynah said that the percentage of chronic stenosis was less than one per cent. He had been doing this work for eight years, and had not found it to increase during that period. Of forty cases which he had treated, twenty-six are well, two cases which he presented he did not consider cured, for the required years had not passed, eight had died, and the rest were under treatment at the hospital.

In answer to the second question—the reason why the tube had to go back in the acute stage—he answered, that in the severe cases in which resolution did not take place early, the subglottic infiltration which involved the mucosa and sub-mucosa in the acute stage would gradually close the lumen and re-intubation was necessary. This was the very first stage of the hypertrophic laryngitis. Secondly, that the tube acted as a splint to the muscles and caused a disuse spasm when only worn for four days. This Dr. Lynah thought explained the reason for the subacute and chronic case.

Dr. Gleitsmann said that if he understood the speaker correctly, he considered his case and one reported recently by Dr. Voislawsky to the section, the only ones on record of a foreign body in the sphenoidal sinuses. Chiari reported a case of a pistol ball in the sinus at the Vienna Laryngological Society, 1910, and Oppihofer found in 200 post-mortem cases stomach contents in all the accessory sinuses; nine times in the sphenoidal sinus.

Surgery of the Hypophysis: (Pituitary Body) With Especial Reference to the Endo-nasal Method of Hirsch. By I. W. Voorhees, M. D.

Published in full in the August, 1912, issue of The Laryngoscope.

DISCUSSION.

Dr. Douglass said that the discussion of such a paper was almost hopeless; it should be accepted without discussion. He felt some one should compliment Dr. Voorhees on the interesting way in which he had presented the subject. It was scarcely possible to discuss the subject until more of this work had been done. He had not done any, but was very glad to have his attention directed again to this important operation. For the past few months we have been reading in French and German medical literature about this operation, and from what he had heard to-night the operation was not so simple as it was reported to be. He greatly admired the charming modesty with which Dr. Voorhees had presented his work.

He could recall no case where this operation should have been performed, had he known of it. From embryological studies he had accepted the view that the hypophysis was a degenerating organ, like the appendix, and not an actively functionating one. He was inclined to think that this work in the future will not be very often done. The case against the hypophysis did not seem to be proved, and in cases of acromegaly we are not sure that that organ is responsible, though one could easily see that the organ might sometimes be at fault.

Another impression which he received from the paper was the fact that the rhinologist at last seems to be coming into his own. The early practice of rhinology consisted mainly of some laryngeal tinkering, swabbing, and partial removal of adenoids and tonsils, and a multitude of operations on the turbinates. Then the antrum was wrested from dentists, perforating ethmoid and frontal sinus cases were seized from the eye specialist, and some ear diseases were taken away from the aurist; then the field was extended with bronchoscopy and esophagoscopy, and now the rhinologist is encroaching upon the brain regions, and will be able to do some of that surgery, if it is best done through the nose. Since we have been able to get these things from the other men, rhinology is one of the live and interesting specialties of the day, and while many questions are still under debate we will always have an increasing interest in our work and feel that we are practicing one of the most absorbingly interesting specialty.

Dr. Voorhees thanked Dr. Douglas for his remarks, and said that his purpose in presenting the paper was not simply to have a chance to talk but to bring before the section something that was really new and important. As Dr. Douglas had said, there are many paths in rhinology that have been neglected, and this was surely one which very properly comes under the view of the rhinologist. The general surgeon has been doing these operations, chiefly because no other specialist has offered to do them. Perhaps the reason the rhinologist has seen such cases infrequently is that they have not come to him but have gone to the general surgeon who is supposed to be anxious and capable of doing everything that has to be done with the knife. Dr. Cushing was selected to operate upon Dr. Leshure's case because he has probably done more brain surgery than any one else in America and is thoroughly familiar with the surgery of the head and neck. He really did a sub-mucous resection from the buccal cavity. He removed the septum, preserved the flaps, went into the sphenoidal cavity, and carried out the technic that other men have performed. The entire question concerns the method of approaching the hypophysis. When the sphenoidal cavity is reached, the technic is essentially the same in all extra-cranial methods. One simply has to decide which is the better route of approach. Any man who is familiar with sub-mucous work and who performs the operation on the cadaver a few times is capable of carrying out this operation on the living. Familiarity with all the essential steps is, of course, necessary. Any one would hesitate at the first operation, but since it has to be done, the rhinologist should get into line and fit himself for the work.

(Regular Meeting, October 23, 1912.)

Case of Atresia of the Palate and Rhino-pharynx. By Dr. R. C. Myles.

Dr. Myles said he had seen a number of cases of atresia of the rhino-pharynx, many of which were cured by the Nichol's method, but this case of the boy was one of the most difficult propositions he had ever seen. There had been a loss of the lower part of the soft palate by traumatism and an adhesion extending upwards and outwards from above the faucial pillars to the Eustachian tubes. An operation, a modified MacKenty, was performed by him and two sections of the posterior wall of the pharynx were turned upward and sewed to the posterior raw surface of the soft palate. This procedure promised a good result for a few weeks. Extensive cicatricial tissue on the sides filled in and almost closed the opening. He then placed silver wire through the adhesion above the left tonsil and brought it out in the rhino-pharynx and twisted the ends together and left it in place about three months. At this time there was a corrugated mucous lining of a small aperture leading from the rhino-pharynx to the mouth; the tissue within the wire was then cut through and this produced quite a large opening as can be seen at the present time. As a safety measure, for the future, he placed a silver wire on each side through the posterior-superior margin of the faucial tonsils and carried it up in the rhino-pharynx near the Eustachian tubes, brought the ends down and twisted them together. The ends were left behind the soft palate in order that they might not irritate the tongue. In the course of several months, the wires will be removed and he hopes to present the patient for further observation.

Functional Aphonia. By Dr. Otto Glogau.

The patient was presented and asked a few questions but could scarcely articulate. Dr. Glogau said that she had come to his office the previous day in this condition. She was 27 years of age, and was married secretly nine years ago. Her husband deserted her this winter, and she has been employed at $5.00 a week in an apartment store. With this she has to pay rent and help support her family, and she is a good woman. She is very excitable, and every now and then has an attack of tonsillitis. She has frequent hysterical attacks, when she cries, throws herself to the floor and acts like "crazy" (as her mother says). There are no changes noticeable in the larynx; there was no specific history. The rhino-glottis presented the characteristic picture of hysterical aphonia. There was no paralysis present, but for a tenth of a second the vocal cords touch each other then open immediately and remain in a cadaveric position. No treatment had been given. The doctor said that he would welcome any suggestions for treatment. (The patient was the next day subjected to a sudden shock by the spark of a high frequency current and immediately regained normal speech. Dr. Freudenthal was kind enough to examine the patient right after this one and final treatment and he agreed that the author's diagnosis of histerical aphonia was correct).

DISCUSSION.

Dr. Freudenthal thought that if the acute laryngitis were treated first, quick results could be secured.

Dr. Alexander said that he had found static electricity of great value applied on the spine, especially the long sparks. They seem to furnish the best tonic treatment. He had had several such cases.

Dr. Harmon Smith said that he would like to bear out what Dr. Alexander had said relative to the application of the thermo-cautery. He had had occasion to see the efficacy of this treatment in several cases, but believed it was due to no virtue of the cautery or for that matter to any form of electricity, but rather to the mental effect.

He recalled one case at the Manhattan Eye, Ear and Throat Hospital where the house surgeon had used a bucket of cold water upon the patient who immediately regained her voice. He believed that these cases were of a neurotic nature and that the mental condition played a large part in the symptoms.

Dr. Myles said that there was no doubt that a mental shock was very effective in these cases. When he first came to New York a prominent practitioner had requested him to see a woman who had not been able to speak for months. He had sent a large electrical apparatus to her room, and before the consultant and himself arrived the woman had recovered her voice, and they had no opportunity to use the battery.

Dr. Glogau said there was no evidence of an acute laryngitis. So far as the suggestions made were concerned, he had thought of the electric shock, and also of some psychic treatment, but he wished to show the patient first.

Epithelioma of the Larynx. By Dr. John Horn.

Abraham W., 50 years of age, came under my observation September 11, 1912, suffering from hoarseness which had existed nine months. Could only talk in a hoarse whisper. Family history good. Wassermann reaction made twice was negative. Smoked strong cigarettes, and drank considerable alcohol.

Laryngeal examination revealed several irregular-sized, pale red papillary tumors, partly covered with a grayish mass involving the left vocal cord and ventricular band, and left side of the base of the epiglottis encroaching beyong the median line. No enlarged glands noticed. There was slight interference with respiration, but no pain in swallowing. He has had some slight bleeding when growth was rubbed with cotton applicator. A portion was excised and sent to Dr. F. B. Humphreys, Pathologist of the German Hospital, who reported as follows:

> "Specimen shows malignant epithelial new growth. The epithelial cells for the most part are rather large and protoplasmic, and arranged in islands separated by a moderate amount of hyalin connective tissue stroma. In a few places in the center of these islands are found distinct epithelial pearls. Mitotic figures are not abundant. Anatomical diagnosis: Squamous celled epithelioma of larynx."

Gumma of the Larynx. By Dr. John Horn.

James C., 40 years of age; hoarseness off and on during the last year. He gives a history of primary infection about a year ago. Wassermann recently made was strongly positive. He received two intra-muscular injections several months ago. For the present he is under mixed treatment.

DISCUSSION.

Dr. Abraham said that the case seemed to be a proper one for laryngectomy, if the patient would consent to it. Of late several cases had come under his observation where the laryngectomy was performed, but the glands in the neck were not removed. In one case a second operation for the removal of the glands in the neck had to be performed within two months following the laryngectomy, owing to a recurrence of the growth in the pharynx. This case was now abroad.

In the case of the patient with the gumma, he presumed that Dr. Horn would try "606." He was confident that if a sketch were made before this treatment and again six or seven days later, the difference would be surprising.

Dr. Simpson said that the first case presented to Dr. Horn seemed to have the appearance of the white-cotton-tuft growths within the larynx, one of which was presented by Drs. Gleitsmann and Harmon Smith at previous meetings of this Section. That type was always supposed to be malignant. Contrary to this opinion, however, Dr. Simpson had recently presented a case before the American Laryngological Association in which the cotton-tuft growth proved to be tuberculous. The entire half of the interior of the larynx on that side was excised and the patient so far had made a perfect recovery, without any return of the growth.

Dr. MacKenty thought that nothing short of extirpation would be of any avail. He is going to try the Gluck operation in these cases. This summer while in Vienna he had seen thirteen cases (where this operation had been performed) under local anesthesia. The patients stood the operation very well, but had a good deal of pain during operation. The convalescence was better than that observed under general anesthesia. Whether this work could be done in this country under local anesthesia he could not say. Marschek does a very clean operation, taking out everything from underneath and around the sub-maxillary glands, down to the clavicle so that the whole neck is dissected clean. It requires three to five hours under local anesthesia, and is a very extensive operation. Marschek says that he looks forward to better results in future.

Dr. Horn said that he had not liked to advise intravenous injection of the case with the gumma until after he had shown it before the Section. He had had a similar case and was surprised to see how soon the growth disappeared after the intravenous injection.

Case of Adeno-carcinoma of the Nose. By Dr. L. D. Alexander, Jr.

Dr. Alexander stated that the literature to date contains case reports of approximately 200 cases of primary intra-nasal carcinoma. In the order of their frequency they are: (1) squamous celled; (2) cylindrical celled; (3) medullary form; (4) adeno-carcinoma. Of the latter form records show but twenty-one cases.

Case: Female, 55 years; obstruction of right nostril for three years. Had polypi removed many times. Profuse mucoid and bloody discharge. Examination: Boggy tumour, lobulated, arising from middle turbinate and adjacent regions. Extending into antrum and frontal sinus. Bled on probing. Right antrum and frontal region dark on transillumination.

Confirmed by radiograph. Piece removed and examined by Dr. E. C. Smith who reported tissues to be adeno-carcinoma.

Operation: Incision beneath right eyebrow and side of nose for two inches. Entrance through orbital plate of ethmoid. Exenteration of ethmoid regions. Curettage of frontal sinus, sphenoid.

Antrum entered through canine fossa and curetted. No return of condition since five months.

DISCUSSION.

Dr. Hurd said that five years ago, (1907), he had reported a case of adeno-carcinoma of the nose involving right antrum and the entire right maxilla was removed. Two years after the operation there was no recurrence. Six months later there was a recurrence, and at the end of three years he had a recurrence in the left maxilla; half of that was taken out and six months later there was another operation, and after another six months still another operation, and the contents of the orbit were removed. The patient has now an extensive recurrence on the soft palate, and along the orbit and on the edge of what was left of the zygoma. He may live for another year yet. It was now seven years since the first operation. It was very interesting to keep track of these cases and to see how long they go before recurrence. At the first operation, Dr. Wright had reported a mild adeno-carcinoma; then from a deeper cutting he made a microscopic diagnosis of a very malignant growth, and the clinical course would put it midway between mild and severely malignant.

Dr. McCoy said that the case of Dr. Alexander interested him very much, for in February, 1905, he had presented a case of adeno-carcinoma of the frontal sinus. He first saw the man a year before doing a radical operation. The growth was twice removed intranasally, coming back very quickly. The patient suffered a great deal from headache, and submitted to the radical operation because of the pain. When the frontal sinus was opened it was found to be crowded with the growth, and a portion of the posterior wall was eroded; the growth was just about to attack the brain. This case seemed to run a rather mild course, for three years, finally spreading rapidly and quickly. At that time he had been able to collect reports concerning eleven cases. To-night Dr. Alexander had reported on twenty-one cases collected. It was not a very common growth.

The preliminary method of treatment of which Dr. Alexander had spoken, tying off the carotid, seemed excellent, as these cases are very bloody.

He had followed the case of which he had just spoken for two years after the operation, without recurrence, but had not seen him since. The man was a painter, about 47 years of age, and lived in Brooklyn.

Dr. Hurd said that in the different microscopical sections in the case of which he had spoken, several, made from time to time, were all absolutely identical. They did not become more malignant than in the beginning. The case was treated at one time with the x-ray for six months, without material change. Dr. Freudenthal then treated it with radium, and that seemed to make some impression on the soft palate, but did not stay the growth. At present, the case is inoperable.

Dr. Joachim (of New Orleans) reported another as yet unpublished case. Its course extended over four years from its inception. At first it was of a very mild character, but later it became very malignant. An interesting feature from the clinical standpoint was that twice the patient had erysipelas, which seemed to have a very beneficial effect where it spread, but it seemed to go all over the head without attacking the new growth at all. The man submitted to any number of operations, and the growth spread along the lymphatics in the radius of this growth. The poor fellow had also an invasion of the frontal sinus, with exposure of the dura. It extended along the soft palate and down to the fauces. He finally died of sepsis.

Dr. Hurd told of another case in which the diagnosis of frontal sinus disease was made, and the patient was sent on to New York for operation. A year before, the patient had had polyps removed for frontal sinus trouble, and came under observation with a diagnosis of frontal sinus for radical operation. The nose was occluded with a very vascular growth, and the glands of the neck on both sides were involved. Dr. Wright pronounced it adeno-carcinoma from section of one of the glands. Dr. Hurd said that he refused to operate on the case, and the patient returned to Philadelphia and submitted himself to operation there, and died on the table of hemorrhage.

Dr. Alexander said that these cases seem rare because they are not diagnosed. Probably many in the incipient stage come under observation but are not correctly diagnosed, and he wished to make a plea for the routine examination of all polypi with the view of discovering many cases of this kind which have heretofore been overlooked.

Restoration of the Entire Nose by Rhinoplasty and Bone Transplantation.

By Dr. W. W. Carter.

Dr. Carter said that the patient had been referred to him by Dr. Frank Miller. She was 32 years of age and had been married for seven years. Six years ago she gave birth to a still-born child, and five years ago had another child which is living and in good health. Family history, so far as syphilis is concerned, negative. When sixteen years of age (sixteen years ago) she had a slight catarrhal trouble in the nose, and while under treatment by a doctor developed a chancre in the nose. A little later secondary symptoms developed, and soon after that tertiary symtoms set in, accompanied by a very profuse and fetid discharge from the nose. A little later pieces of bone were expelled from the nose, and the ulceration continued until it reached the external nose; the hard and soft palates were involved, and the alveolar process of the upper jaw, destroying a large part of it corresponding to the incisor area. Her ears and eyes were also involved, and she lost the sight of the left eye. A number of years ago she was exhibited before this section as one of the most malignant cases of syphilis that the gentleman then presenting the case had ever seen.

This extensive process continued for two years, and then healed up, the nose having been completely destroyed. She received a small amount of mercury and iodid of potassium during the active stage of the disease, but after that received no treatment at all. She has been without a nose for fourteen years.

Dr. Carter said that he had seen the patient first during the latter part of February, and at that time she had only a hole in the face surrounded by a thick band of cicatricial tissue which connected with the bone underneath. The lip was contracted, the uvula was gone and the soft palate was scarred and contracted. The inside of the cavity was filled with greenish yellow pus and she had a very offensive ozena. The Wassermann reaction was faintly positive. She was admitted to a private ward in the Manhattan Eye, Ear and Throat Hospital, and put under iodid of potassium and tonic treatment, with a private nurse day and night, as he was especially desirous of getting a good result. The operation was performed on March 20. A section three inches long without the periosteum was taken from the right ninth rib. This was split and the cancellous tissue scraped from the outer half. This was inserted between the superficial and deep fascias over the left biceps.

At the end of ten days the bone seemed to have become incorporated in the tissue; there was no reaction in the area of transplantation; so the second stage of the operation was performed. On March 30 a flap including the transplanted bone was dissected up. This flap was made nearly twice as large as was thought would be needed for making the new nose in order to allow for cicatricial contraction. This flap was sewed into proper position over the roof of what was formerly the nose, between the eyes, and the arm was bound to the head with adhesive strips. The tissue seemed to take right away, and the connection became pretty good. The upper end of the bone had been inserted beneath the periosteum, over the naso-frontal process. Three days after this operation skin grafts were taken from the thigh and grafted on the under surface of the flap. The tissue seemed to take in every place, and on April 12 the flap was severed from its connection with the arm. The flap at once became perfectly white, and in a few hours was purple or bluish, and it seemed certain that the flap would be lost. So Dr. Carter tried an expedient which he believes will save many flaps if it is tried in time. From his experience in this instance he can heartily recommend it. He applied a leech to the distal end of the flap. The suction of this stimulated the flow of blood through the recently formed capillaries at the connection of the flap with the face and the flap immediately became warm and had a good color, and there was no longer any doubt about its retaining its vitality. The leech bite continued to bleed for twenty-four hours. Dr. Carter is convinced that the flap would have been lost but for the leech. Later, several moulding and plastic operations were performed, and the result is a fairly satisfactory nose. The patient can now breath well through the new nose and her appearance is certainly very much improved. Another interesting point is that she has sensation in the nose, and she claims that this is becoming more acute.

DISCUSSION.

Dr. Frank Miller said that he had never seen a more horrible syphilitic ulcer than in this case. As could be seen from the photographs, the ulceration was extensive, the hard palate, the septum, and everything was gone, and to-day the woman has a very good nose. He wished to congratulate Dr. Carter, and praise his skill in securing such results, for they were rare, and when a fellow practitioner does such a piece of work there can be no words of praise too high. He had watched the operation and it was performed with great precision and skill. It was well thought out, and the Doctor had won his laurels for every single step of the operation.

Dr. Harmon Smith said that he had had occasion to see the case before it was operated upon and had doubted the possibility of a successful outcome owing to the immense destruction of tissue. He had followed the operative procedures of Dr. Carter with great interest, and found no words too strong to commend the remarkable success which Dr. Carter had made in this piece of plastic work; that the ingenuity displayed by the doctor in transplanting the rib to the arm, previous to connecting the arm tissues to the remaining nasal structures and also in drawing healthy blood into what appeared to be a piece of dying tissue by means of a leech, showed peculiar recognition of the necessities incident to plastic work.

Result of Plastic Operation (With Insertion of a Celluloid Plate) For Relief of Excessive Deformity Following Killian Operation. By Dr. Gerhard H. Cocks.

The patient had had an extensive deformity of the forehead following a Killian operation upon the frontal sinus performed six months ago. The sinus was a very high and deep one; the whole bone had been removed, and the skin had fallen in over the posterior wall for an area as large as a twenty-five cent piece. Sixteen days ago the patient was admitted to the Hospital in Dr. Chappell's clinic. The skin was loosened up through the old incision, the area of cicatricial tissue over the supra-orbital arch was excised and a plate of celluloid inserted under the skin, with its lower border resting on the supra-orbital arch. The plate was previously shaped to conform to the configuration of the forehead by immersing it in hot water. The skin-wound was then sutured with silkworm gut. The cosmetic result was entirely satisfactory.

Some of the members of the section had seen the patient's deformity before operation, and consequently appreciated how bad his condition was at that time.

The size of the celluloid plate was 1½x2 inches. Its thickness from $\frac{1}{16}$ to ⅛ of an inch.

DISCUSSION.

Dr. Emil Mayer said that he had understood Dr. Cocks to say that no photographs or plaster cast of the case had been made. He thought it was most important that in cases of this character the conditions as they existed before the work should be presented, so that not only those who had seen the case both before and afterward might know about it, but that it might be preserved as a record. More care should be exercised in recording operations of this kind.

Dr. MacKenty said that he had seen the case after the radical operation and that there was a very great deformity. The result as presented was most satisfactory. The only criticism that he would make was that in using a thin plate to cover the deformity a blind space was left behind. The result was a very nice piece of work, and a tremendous improvement over the previous condition. He congratulated Dr. Cocks on his effort.

Dr. Carter said that Dr. Cocks no doubt had corrected a great deformity, but that not sufficient time had elapsed to be certain that the plate would be retained. He had studied the results obtained by introducing foreign bodies under the skin for the purpose of correcting deformities, and in almost every instance they had later sloughed out. He hoped that Dr. Cocks would show the case again later, and let the Section see the ultimate results.

Dr. Cocks said that of course he did not know whether the plate would stay in situ permanently, but he certainly hoped that it would. Dr. Hartley had been using such plates for a long times in cases of epilepsy where the bone was removed, and Dr. Monroe says that he has seen Dr. Hartley cut down on these plates after a year, for a recurrence of the epileptic attacks, and they have been in good condition—no slough and no infection, everything very satisfactory.

Technic of Intra-nasal Operation on the Lacrimal Apparatus. Demonstration on the Mannikin. By Dr. Sidney Yankauer.

Published in full in The Laryngoscope, *December, 1912, p. 1331.*

DISCUSSION.

Dr. Myles said that Dr. Yankauer was to be congratulated on the progress he had made in this operation. About fifteen years ago he himself had tried the operation with the same object in view, which consisted of the removal of the anterior end of the inferior turbinal and the median wall of the naso-lacrimal duct. In some cases he had secured good results, in others, failure, which was attributed to the contraction of the tissues lining and covering the duct. He had always had a great deal of respect for the outlet valve, and in operating on many cases of antrum of Highmore affection through the inferior meatal wall, he had no record of ever having closed the duct. His impression was that sometimes injury is done to the duct by probing. The mucosa of the bony canal is very soft and more caution should be used in the technic of probing.

Dr. Mayer said that perhaps he could speak on this subject with experience as the larger number of these operations were performed on patients in his clinic. Clearly as the operation had been presented, perhaps none of those present had any idea of the infinite patience required, and only a manipulative genius like Dr. Yankauer could work the method so ably and successfully as it had been presented. It sounded very easy to pick out this small portion of bone in the lower end of the lacrimal sac, and it was with extreme satisfaction that he had followed this demonstration. Remembering the necessity of being exact and following the technic described, the results are all that Dr. Yankauer had claimed, for he had not only seen a number of the patients who had been operated upon by this method, but also the results obtained which were all that were claimed by the speaker.

DR. EARLE CONNER congratulated Dr. Yankauer upon his excellent presentation. He himself has extirpated some thirty sacs by the cutaneous route and the results were not very satisfactory. In about half the cases suppuration had ceased. Dr. Yankauer's idea of resecting the bony wall and stitching the duct was certainly a surgical procedure in that good drainage was secured, and it was to be hoped that further experience would establish the value of the operation.

DR. J. GUTTMAN said that he had had some experience in extirpating the lacrimal duct and sac, and only the marvelous technic of the reader of the paper could accomplish such results as had been reported tonight. Not every case should be sent to the rhinologist with the expectation of going successfully through this very difficult and delicate operation. We should not expect these cases to be treated oftener by rhinologists than before. As a rule, it is not in the bony part of the duct but in the membrane of the upper neck of the lacrimal sac, that a man with experience most often finds the obstruction. From an anatomical standpoint, one cannot often expect to find the obstruction in the bony part It was certain that this operation would find a place and would be referred to the rhinologists, but it did not seem probable that most of the cases would be treated in this way. More often it is not the lower meatus of the nose which is responsible for this infection, but the middle meatus. Then, too, the removing of the lacrimal gland for the purpose of relieving the condition should be done in only very exceptional cases.

DR. GEORGE E. DAVIS said that he was sure that the members of the Section would appreciate the importance of this contribution and the description of the intra-nasal operation for diseased conditions of the lacrimal sac and nasal duct. In the paper the writer enumerates two advantages over the external or extra-nasal operation, or the excision of the lacrimal sac. By his technic he claims the sac and duct remain patent, and, therefore, maintain drainage and preclude epiphora and the possibility of external scar disfigurement.

Dr. Davis stated that his brother, Dr. A. E. Davis, had operated a number of these cases by another technic, originated by Dr. Mueller of Vienna. He agrees with Dr. Yankauer that these cases originate from the nasal source. Dr. A. E. Davis had probably operated on some twelve or fifteen cases of dacryocystitis with excision of the tear sac, and there was practically no trouble from epiphora, and absolutely no external disfigurement. The operation of removing the lacrimal gland to avoid epiphora is practically never called for. Under the technic described by the writer probably the results are all that are claimed, but it is not so easy or efficient as the external operation, where every step of the technic can be observed. In the external operation local anesthesia can be employed, and is made almost perfect by injection of cocain superficially, and beneath the periosteum in the locality of the lacrimal sac. Hemorrhage is controlled by adding adrenalin to the cocain injection. If, in a few cases, this method should not secure complete anesthesia, one always has ether at command. When ether is used the local hemorrhage may be a little more severe. Moreover, with the external operation, after the technic of Mueller of Vienna, the results will be more successful with most operators than by the difficult and complicated technic of the intranasal operation described by the writer of the paper.

Dr. Glogau said that he admired Dr. Yankauer's very skillful operation. He had himself for the last three years operated on cases of purulent dacryocystitis by the nasal route. He had the anterior part of the inferior turbinate removed and had the bony canal broken open by means of a curved frontal sinus probe armed forceps. The ingenious idea of Dr. Yankauer's method is the dissection of the mucous flap and the re-attachment of the latter after the operation is performed. He believes that Dr. Yankauer's method will be generally applied.

He found that in children purulent dacryocystitis was frequently combined with ethmoiditis. In one instance he opened and curetted the ethmoidal cells in a child while the lacrimal sac was simultaneously operated upon by Toti's method. He believes that at some future time all these cases will be treated by the rhinologist, as the naso-lacrimal duct is really, as Dr. Yankauer had laid stress upon, a nasal accessory cavity. In quoting the literature, Dr. Yankauer had overlooked Schirmer's work on the naso-lacrimal duct in Axhausen's textbook on Diseases of the Eye.

Dr. Yankauer said that he was not an ophthalmologist and had had no experience with the excision of the lacrimal sac, except in the cases he had seen which had epiphora afterwards. Opinion seems to differ in regard to the question as to whether epiphora follows the excision of the sac. In the last edition of Fuchs, the author states that some epiphora is found in every case; and the translator took occasion to remark in a footnote that in his opinion it did not occur at all. We must remember that excision of the sac is an external operation performed in a case of suppurative disease and the cosmetic results must be taken into consideration; and they are not always as desirable as might be wished. Some have very good results, but others are distinctly faulty. For this reason, intra-nasal operation offers a chance of curing the disease without an external scar. He admitted that it was a difficult operation, but like the submucous operation, the first case took three hours for its performance, the last three-quarters of an hour. It only requires a little practice for anyone to be able to do it, just as everyone is able to do submucous resection at the present time.

Gout of the Salivary Glands. E. Deglos, *Presse Med.*, Feb. 10, 1912.

Deglos reports several cases. The affection is not rare, but at times the source of pain and cause of trouble is not discovered. Ed.

THE PHILADELPHIA LARYNGOLOGICAL SOCIETY.

Regular Meeting, June 3, 1912.

PRESIDENT DR. ROSS HALL SKILLERN IN THE CHAIR.

Submucous Resection of the Nasal Septum. By W. L. BALLENGER, M. D., of Chicago; (by invitation.)

In the submucous resection of the nasal septum we must first have a reason for operating. We do not operate simply because the septum is deflected. Many deflected septums do not produce pathological results in the nose. Operations should only be necessary when those deviations obstruct the respiratory portion, especially the upper respiratory portion of the nose. The deviations which do the most harm to the patient are those not in the lower nasal chamber, but those formed by the bridge of the septum, and those above the vomer, which are in the region of the middle turbinate body. The respiratory tract of the nose is not in the lower portion, but in the upper portion of the nose. The vomer may be deviated so as to touch the inferior turbinate, or may extend forward into the vestibule far enough to partially obstruct the inspiratory current of air, and thereby produce rarefaction of the air posterior to the obstruction. This obstruction should be removed. The same is true of anterior angular deflections of the cartilaginous septum. If the deviation is higher up, in the region of the middle turbinate, it interferes with ventilation and drainage of the accessory sinuses, namely the frontal, anterior ethmoidal and the maxillary sinuses. The lower deviations cause what is known as turgescent rhinitis. The sinuses need to be drained and ventilated, and if there is any obstruction preventing this drainage and ventilation it should be removed.

Technic. Local anesthesia. This operation should not be a long procedure, in fact I take 20 minutes for the submucous resection. Some operators take two to three hours. This is hard on the patient and hard on the operator. There are certain little tricks to make the operation short, and I will try to explain these to you.

Cocain anesthesia is preferable, though a general anesthesia may be administered. The method of applying the cocain is important. Powdered cocain is used instead of solution. A delicate silver cotton wound probe is moistened in adrenalin solution, the excess squeezed from it, and then I dip it into the powdered cocain. The loose granules are then gently knocked off, and the probe is introduced into the nose, and the entire nasal septum gone over, every portion can be reached with this flexible probe. The first application is not pleasant in some cases, but as the subsequent applications are made it will not be so uncomfortable for the patient. After the first application I wait about five minutes, introduce the probe again, wait another five minutes and make another application. Three applications in all. This usually completes anesthesia. The advantages of this method of applying cocain over the use of solution are the speed with which anesthesia is induced and the comparative infrequency of cocain toxemia. By this method little or no cocain is swallowed, whereas when the solution is used the patient tastes the cocain and this produces toxic symptoms.

The Incision. The choice of the location of the incision should depend upon the character of the location of the deviation. We use the Killian or Hajek incision. I recommend the incision being made on the left side, as most operators are more dextrous with their right hand than with the left. The tip of the index finger of the left hand should be introduced into the nasal chamber to exert counter-pressure when the incision is being made. The incision should only extend through the mucous membrane and perichondrium. This step of the operation is most important, and if the elevation is properly done over the entire area of the deviation on both sides of the septum the subsequent steps are comparatively easy. In cases where the cartilage, perpendicular plate of the ethmoid, and the vomer are involved, the membrane should be elevated over almost the entire area of both sides of the septum. If the cartilage of the septum is only affected, the elevation should be extended about one-half inch beyond the junction of the cartilage and the perpendicular plate, and down to the floor of the nose. Always elevate at least one-half inch beyond the area of the tissue to be removed, as otherwise the membrane may be injured in the process of removing the deviated portion of the septum. The technics of elevating the muco-perichondrium may be accomplished in various ways. Some operators use the small, thin elevators. Curved elevators are also used to work around the curved portions of the septum. I, myself, use a heavy, broad, dull elevator. The chief reasons for using the blunt, heavy elevators is the greater speed and the lessened liability of tearing the membrane in the process of elevation.

To start the elevation a sharp or semi-sharp elevator should be used, care being exercised to get beneath the perichondrium. If the elevator penetrates between the mucous membrane and the perichondrium, the surface of the cartilage will present a velvet-red appearance, as the perichondrium is still covering it. If, however, the elevator penetrates beneath the perichondrium the exposed cartilage presents a glistening white surface. If this is properly done the remaining elevation is comparatively easy. Having started the elevating, insert the blunt elevator into the small pocket already made. Direct the elevator parallel with the ridge of the nose, as this is the direction of least resistance. Having introduced the elevator almost to the cribriform plate the elevation should be continued backward and downward with the whole length of the shank of the elevator within the pocket of the membrane. By using the tip of the elevator perforation is more liable to occur.

After introducing the heavy blunt elevator as high as the cribriform plate, exert pressure downward and backward with a twisting motion, and as a rule the membrane will strip down to the crest of the vomer in two or three seconds. If the cartilaginous portion of the septum or perpendicular plate is convex the operator should remember that these portions of the septum are thin and flexible; being so they may be forced with the elevator to the median line and thus temporarily rendered straight. While held in this straightened position the shank of the instrument is passed downward and backward elevating the membrane as it proceeds. The tip of the nose is flexible, and the instrument should be held parallel with the anterior portion of the cartilage until it reaches the crest of the perpendicular deviation. The instrument should then be shifted until it is parallel with the cartilage posterior to the crest. The flexibility of the tip of the nose makes this possible, or the crest may be forced to the concave side, thus rendering it straight and the elevation continued.

The periosteum is not reflected uniformly over the bony portion of the septum. It is only where bone unites with bone, and where the perpendicular plate of the ethmoid unites with the vomer, that the periosteum is continuous, and where the vomer unites with the cartilage of the septum; the periosteum is not so continuous with the perichondrium of the cartilage. In the latter region the periosteum arises from the floor of the nose and passes upward over the lateral surface of the vomer to its crest, over which it is reflected, and then passes downward over the opposite lateral wall of the vomer to the floor of the nose.

Removal of the cartilage. I use the swivel knife to remove the cartilage. I presume you are all familiar with this method, as it is an old one. Always leave enough along the bridge of the nose for support. It is quite essential not to remove too much.

Removal of the perpendicular plate of the ethmoid. This is accomplished by the Jansen Struycken forcep, introduced through the perichondrium pouch, the perpendicular plate is seized and gently rocked until it is disconnected from its attachments.

Removal of the vomer. The muco-perichondrium is elevated from the concave side and if possible from the convex. A dove-tail Hajek chisel is introduced close to the floor and with a few blows of the mallet the vomer is separated from its attachments to the superior maxillary and removed with a pair of strong forceps.

Dressing. As a dressing I use Simpson's sponge tents. The muco-perichondrium is first clamped together with a speculum, and then two of the sponge tents are inserted into the nostril of the convex side, and one into the nostril of the concave side, and a few drops of peroxid of hydrogen instilled into the ends of the tents, the tents swell and consequently cause the two mucous surfaces to adhere together. I only allow this dressing to remain in the nose twenty-four hours.

DISCUSSION.

DR. WM. A. HITSCHLER (opening the discussion): Submucous resection never appealed to me until I saw Dr. Ballenger perform it. I recall a case two years ago in which there was considerable difficulty for me. The cartilaginous portion of the septum was removed, but the perpendicular plate of the ethmoid was exceedingly deviated, being pressed firmly against the lateral wall of the nose. I find that in using the blunt elevator saves time and difficulty. Occasionally there are deviations of the cartilage beginning at the crest of the vomer.

Dr. E. B. Gleason explained in detail his operation for the correction of deflected septums by the U-shaped flap.

Dr. O'Reilly called attention to the incision known as the Freer incision, which consists of making a cut through the cartilage, either anteriorally or posteriorally to your original incision through the muco-perichondrium, as this obviates the danger of perforation, should the operator's knife go through the muco-perichondrium of the opposite side, as the incision will then not be opposite one another. Therefore, a permanent perforation will not result.

Dr. Mackenzie spoke of the difficulty of denuding the muco-perichondrium on the concave side of the vomer, and of the advisability of making a slight incision along the crest of the vomer, then denudation can be accomplished with ease. An incision can also be made on the convex side, not opposite, but anteriorally or posteriorally to the incision of the concave side, in order to facilitate the escape of blood. He also spoke of the advantage of using Schleich's method not only for its anesthesia, but by causing pressure, which assists materially in the rapidity with which the muco-perichondrium is denuded from the septum.

Dr. Ballenger was questioned in reference to sinking in of the bridge of the nose after submucous resection, and in reply he stated that he had only seen one case of sinking in, and that was a case following perichondritis. It is always best before operating to make a thorough examination, and when you find the nose flabby and soft, operative procedures should not be taken, as there is more or less danger of sinking in of the nose.

Dr. Ballenger was also asked about the correction of deviations of the septum in children, and in answering stated that he did not advocate submucous resection in children, as the cartilage in children is not fully developed, but that in correcting deflections in children he used the developed, but that in correcting deflections in children he used the Sluder operation, which consists of making three parallel incisions middle incision to extend the whole length of the quadrilateral plate.

Some Experiences with Radium. G. S. Ryerson, *Can. Med. Assn. Jour.*, Aug., 1912.

Summing up the result of an experience of three years, and after discussing the strength, duration of applications, amount of filtration, and age of patient, the writer finds that cases in which the mucous membrane of the mouth is the site of disease do not, as a rule, do well, that the tongue is doubtful, and the larynx uncertain. In two cases of lupus vulgaris of the nose, and in tuberculous glands of the neck in young persons, where no breaking-down has occurred, the results were good. The writer is convinced that radium is a therapeutic agent of permanent value. G. Wishart.

BOOK REVIEWS.

Die Neue Wiener Klinik fuer Kehlkopf-und Nasenkrankheiten. (The New Vienna Clinic for Laryngeal and Nasal Affections.) Von Prof. Dr. Ottokar Chiari and Prof. Otto Kahler, Vienna. Pp. 48, with 40 illustrations in the text and 5 plates. Urban and Schwarzenberg, Berlin, 1912. Price, M. 1 50.

The readers of The Laryngoscope will be interested in this detailed description of the new nose and throat clinic of the Wiener Allgemeinen Krankenhaus as presented by Profs. Chiari and Kahler.

All of the new features of the reconstructed nose and throat department of this enormous clinical institution are carefully detailed, the splendid new buildings and equipments illustrated, and in an interesting introduction a brief history of the establishment and the evolution of this institution is offered. It is a monument to progressive laryngology, a Mecca for the post-graduate student, and an example of scientific strength and clinical energy to the entire medical profession.

Beitraege zur Thrombosefrage. (The Thrombosis Question.) Von Drs. L. Aschoff, O. de la Camp, B. von Beck, and B. Kroenig. Pp. 99. Verlag F. C. W. Vogel, Leipsig, 1912. Price, M. 5.00.

This is a collective monograph of papers on thrombosis presented by Aschoff, de la Camp, von Beck, and Kroenig at the meeting of the "Deutsche Naturforsche und Aerzte" in Karlsruhe in 1911.

The question of thrombosis is presented from its various viewpoints—its patholo-anatomical, surgical, clinico-medical, and gynecolo-obstetrical. Aschoff reviews tersely the origin of thrombosis and the evolution of the various theories concerned with it; Beck presents the surgical section; de la Camp considers the question of coagulation in its relation to thrombosis as a most important factor; Kroenig emphasizes infection as a factor in the production of thrombosis, especially in its obstetrical and gynecological aspects. This phase of the question can be substantiated by many observers from an otological point of view as well.

This monograph is a valuable contribution to the literature of thrombosis, and should be of especial interest to all who are following up this interesting question.

Traite de Laryngoscopie et de Laryngologie Operatoire et Clinique. (Laryngoscopy and Operative and Clinical Laryngology). By Th. Heryng. **Pp. 523, with** 155 **illustrations.** Masson and Co. Paris, 1912.

Heryng's book is introduced to the profession by a very flattering preface by Dr. H. Luc. After a short introduction on the anatomy and physiology of the larynx, the book is divided into four chapters: (1) Method of examination. (2) Non-operative measures. (3) Operative treatment. General infectious processes affecting the larynx. It cannot, therefore, be called a second edition of the German book by the same author, published in 1905. The present edition is on a much larger scale; eight new subjects having been added. The first chapter on the methods of examination as well as the following ones on non-operative and operative treatment are written in the same exhaustive and at the same time concise style we are accustomed to in Heryng's writings. All the different methods, from the original examination with the laryngeal mirror up to the latest ones are fully stated, the various illuminations in usage, Kirstein's autoscope, tracheoscopy and bronchoscopy are described.

Considerable space is given in the second chapter to inhalations, the different types of apparatus, especially the ingenious devices described by the author the first time in the *Berliner klinische Wochenschrift*, Nos. 11-12, 1906. His thermo-regulation and thermo-accumulation permit the inhalations of solutions of any density or temperature. Gargles, laryngo-tracheal injections, insufflations of powders, local laryngeal applications with directions for their use, treatment by electricity, galvano-caustic, electrolysis, massage, and lastly very useful remarks on hygiene and diet close the chapter.

As we expected the third chapter, the operative treatment, is the most valuable one of the series and the subject is handled with the accuracy and persuasive force we notice in Heryng, who from the time of the publication of his book "Curability of laryngeal tuberculosis," in 1887, has striven indefatigably by his writings and demonstrably at medical congresses to convince the profession of the correctness of his views and the good results obtained.

At the same time Heryng is liberal and far-sighted enough to appreciate the good effect of galvano-cautery applications in tuberculosis and the article on galvano-caustic and surgical treatment is the first critical study and comparison of both methods. The monograph treats of anesthesia, anti-sepsis, instruments, complications in operations, after-treatment, and contains chapters on artificial epiglottes and laryngostomy. It closes with extra-laryngeal operations.

The fourth chapter includes syphilis, actinomycosis, rheumatism, gout, influenza and skin diseases. GLEITSMANN.

Die Ostitis Chronica Metaplastica der Menschlichen Labyrinthkapsel (Otosklerose, Stapesankylose, Spongiosierung der Labyrinthkapsel). VON DR. PAUL MANASSE, STRASSBURG. Pp. 76, with 20 illustrations on 13 plates. Verlag J. F. Bergmann, Wiesbaden, 1912. Price, M. 8.

In this comprehensive monograph Manasse gives a detailed description of his report on nine cases of otosclerosis as demonstrated at the meeting of the otological society in Basle, and on a tenth case recently observed by him. The author considers every fact in common to all the cases, and emphasizes all the features in the individual cases.

The microscopical findings in each case are especially minutely described, and form an important feature of the monograph on which Manasse basis his conclusions.

The author advances the theory that this disease of the bone in otosclerosis is recognized by the fact that a portion of the labyrinth-capsule loses its normal structure and that a new form of osseous tissue takes its place. This change in the bone-structure usually begins about the anterior lower border of the oval window and progresses to the rest of the capsule, stapes, and round window.

This process begins less frequently at other points; occasionally in the area of the fenestra rotunda and in the porous acoustica interna. The extension or spread of this process varies.

Manasse emphasizes the importance of these histological changes in the osseous labyrinth and accounts for these variations by the difference in the ages of the several patients and the degree of the intensity of the process.

These differentiations in the histological section are carefully and logically analyzed, and the author finally reaches the conclusion that the different types of so-called otosclerosis are, perhaps, varying degrees of changes in the character of the bone-structure of an inflammatory type.

The author leaves as an open question the relation of changes in the soft structures in the labyrinth, such as atrophy of Corti's organ, atrophy and growth of the fibrous tissue of the delicate nerve-distribution in the cochlea and ganglion spirale on the one hand, and changes in the bony labyrinth on the other.

The greatest value that Manasse's work presents is the splendid histological differentiation that he so accurately describes, especially the changes that take place in the bone-structure of the labyrinth-capsule.

This work is also of much aid to us in differentiating typical otosclerosis, or as it should be more classically termed, "ostitis chronica metaplastica of the labyrinth-capsule," from ankylosis of the stapes, which the author terms an accidental pathological association.

THE

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ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

STUDY OF INNOCENT GROWTHS OF THE LARYNX, ILLUSTRATED WITH EIGHT CASES.

DR. J. WALKER WOOD, LONDON.

The origin of benign laryngeal growths is more or less enshrouded in mystery. A glance at the text-books dealing with the larynx and its diseases well illustrates how varied are the opinions regarding the causation of these growths. One author ascribes them to "constant congestion of the cords" or "micro-organisms," another attributes them to "developmental remnants" and "irritation." Yet there appears to be several generally admitted etological factors. These are: (1) that they are less common in present decade than in last; (2) that they are more common in men than in women. Of Mackenzie's[1] 287 cases, 197 were males and 90 females; (3) that they are more common in early middle life, except the papilloma group which are more frequent in childhood; (4) that they are more common in "voice users"; (5) that their favorite site of origin is the anterior third of the ligamentous portion of the cord and the anterior commissure; (6) that they are found with equal frequency on both vocal cords.

The series of eight cases (all derived from private practice) which I am about to describe have been studied particularly from the etiological and bacteriological standpoints, and each case has been chosen to demonstrate some point in the possible life-history of these growths. The base upon which the theory I am enunciating rests, is the well-known medical fact that effusions, whether blood or serous, have a greater tendency to organization and persistence in some individuals than in others. That many innocent laryngeal growths have, as their seat of origin, a hemorrhage (effusion) in the cord, I have little doubt. What is the origin of this hemorrhage and what is its result?

1. Origin: Any sudden strain on the cord, as might be produced by a paroxysm of violent coughing, shouting or even over-use of the voice in a person who has naturally a catarrhal or inflamed mucous membrane, may result in a small hemorrhage. This hemorrhage may be due to excessive stretching of the elastic fibers situated at the edge of the cord, and, with a continuation of the strain, rupture of these fibers, or it may be some small varicose or inflamed vein beneath the epithelium is torn. As is well known, the blood vessels of the cords are peculiarly thin-walled and are thus liable to be easily torn by a strain. Whatever its cause, extravasation of blood occurs either within the substance of the cord (corditic hemorrhage) or superficially beneath its epithelial covering (subepithelial hemorrhage. Case 1). Should the cord be in a fairly normal condition the hemorrhage will be slight, but should it be congested (chronic laryngitis) the hemorrhage may be considerable. Whether slight or great, what is practically a "bruise" is produced and, as is usual in other parts of the body, a zone of inflammation is developed about it.

2. Result: One of three things may now happen. The effused blood may become absorbed and a perfectly normal cord result, i. e. the usual ending. But should the effusion remain, it either becomes organized into granulation tissue (Case 1) or if the effusion becomes infected with micro-organisms through some solution of continuity of the surface of the cord from friction it may break down and ulceration result.

The effusion having undergone organization a granulation is formed which may remain in its immature state, (Case 3) or passing into a more highly developed condition it may become a fibrous node. Should the fibrous elements continue to proliferate, a fibrous tumor or fibroma may be produced. (Cases 4 and 5). The epithelial covering, as a result of the irritation, may also proliferate, and should the irritation be continued, may result in the formation of a papilloma, (Case 7). The blood vessels may increase and on growth become angiomatous. In some cases the granulation remains in its immature state, in a condition of chronic inflammation, retaining the characteristics of a granulation without becoming more fully organized, in other words a "granuloma," (Case 3), the presence of plasma cells in the growth being indicative of chronic or non-leucocytic inflammation. In a proportion of cases the granulation has been observed to become sero-edematous, most likely due to exosmosis from the blood-vessels and to lymph stasis from mechanical causes (Case 2), while in others simple degeneration and sloughing have occurred with disappearance of the growth. A case has recently been shown at the Laryngological section of the Royal Society of Medicine by Dr. Everidge of a simple granuloma undergoing necrosis. Myxedematous changes have also been observed, due to water absorption by the mucinogen of the connective tissue matrix which becomes mucin. I have endeavored to explain with the aid of a diagram, Figure 1 which explains itself, the various courses an effusion may take.

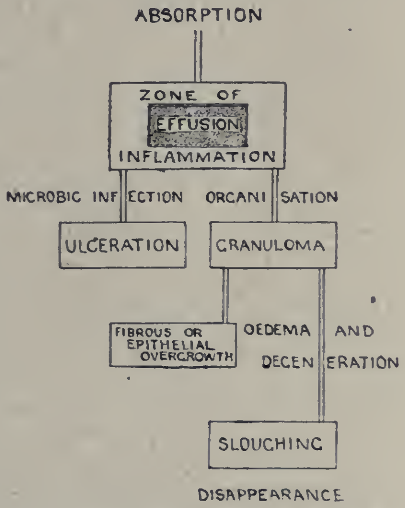

Figure 1. Diagram to illustrate theory of causation.

Benign growths of the larynx, as exemplified by the following cases, present several features in common: 1. All belong more or less to the vascular type of growth. 2. All show signs of hemorrhage having occurred at some period of their growth—hematin pigment, thrombosis or hemorrhages still in the corpuscular stage. 3. All show signs of inflammation, acute or chronic, or of edema, which may be merely a later stage of inflammation. The presence of plasma cells show chronic inflammation. 4. Careful microscopic and bacteriological examinations have failed to reveal the presence of pathogenic organisms. 5. All are superficial in character.

Should the theory of sudden trauma and hemorrhage be accepted a sufficient explanation is provided, for the "generally admitted facts" previously mentioned. In ninety-five cases I have collected from literature on the subject,[2] 43 occurred on the right cord, 35 on the left, and 18 on other parts. In my own 8 cases, 3 were on the left and 4 on the right cord, one was situated on the anterior commisure. Trauma explains the common site of origin of benign growths. As would be expected it is the anterior and middle thirds of the ligamentous portion of the cord which is usually affected, this part being unprotected, as is the posterior third, by the vocal process of the arytenoid cartilage.

Now-a-days laryngeal growths are rare in comparison to what they were in the time of Morell Mackenzie, and an explanation may be found in the fact that nasal obstruction and its sequence, oral respiration, is recognized as a cause of throat troubles, (especially chronic laryngitis) and is quickly and energetically treated. A sufferer from nasal obstruction and one of its sequelae chronic laryngitis is more likely to be afflicted with a corditic hemorrhage than the individual with healthy nasal respiration and healthy cords. From my own observations I am of the opinion that now, as in past times, nasal obstruction is responsible for the majority of laryngeal and aural troubles.

I cannot accept the nodal theory,[3] i. e. that these growths are of the nature of "corns" developing at the point of intermittent pressure, which is also the point of least vibration (nodal point), for the nodal point is being continually altered in producing sounds of varied pitch. Syphilis as an influencing factor in their production is rarely observed, although considered by Lennox Browne to be of great importance. In only one of my eight cases was there a history of this disease.

Virchow is very definite regarding the origin of these growths. He says, "these growths must be regarded as an out-growth of pre-existing connective tissue."[6]

Case 1: Mrs. D., aged 56. An American lady who was recommended to consult my colleague, Mr. Charles Heath, by Dr. Koenig of Paris, who had treated her for an attack of laryngitis and tracheitis contracted during a visit to that city. When first seen by us she was suffering from hoarseness and aphonia. This latter symptom had only manifested itself for three or four days. She also had a hard, dry cough without expectoration.

Laryngoscopic examination: The whole larynx was intensely congested, dry and irritable looking. About the center of the right vocal cord there was a more concentrated area of congestion, which rather suggested a sub-epithelial hemorrhage. A sedative spray was ordered and a diaphoretic mixture given. Several days later a second examination of the larynx disclosed the presence of a small growth situated at the congested area noted at the first examination. The cords were still very congested and as the tracheitis had now spread to the large bronchi, the cough had become more troublesome.

Rest in bed was ordererd and use of the voice forbidden. Sedative sprays for the larynx and suitable treatment for the bronchitis were prescribed. Under treatment with medicated steam the bronchitis and laryngitis gradually improved, but the little granulation still remained even after the cords had returned to normal. Slowly it shrivelled, and in a month's time had completely disappeared, the voice then being as perfect as it was previous to the attack.

A similar case is quoted by Dr. McBride in his Diseases of the Nose, Ear and Throat when he watched the disappearance of a small granulation under treatment.[4]

Case 2: P. S. C., aged 38. This lady was sent by a medical friend in Leeds to London to see me. Her history was as follows: A laryngeal growth was operated upon (removed?) about eight years ago, two years after its initial symptoms, viz. hoarseness and loss of voice became evident. For a time the voice improved but never returned to what it was before the commencement of the hoarseness. She knew of no cause, although an examination of the nose and naso-pharynx disclosed the presence of a highly irritable, injected mucous membrane, and on the question being asked, stated, "she was always clearing her throat," (post-nasal catarrh).

Two years ago (i. e. six years after the first operation) the hoarseness, previously only intermittent, became constant and more marked. She also had a most troublesome cough and had been under treatment for chronic laryngitis for a considerable time without improvement. Several examinations of her chest failed to disclose any signs of tuberculosis, and the after-history of the case has shown that there was no pulmonary tuberculosis.

Laryngoscopic examination: When I examined the larynx I was immediately struck by the fact that the right vocal cord was much congested, while the left was not. Owing to the irritable condition of the pharynx and larynx (even after the use of anesthetin and cocain) it was impossible to make an exact diagnosis, but a later examination divulged the presence of a small, pendulous sub-glottic growth which had its basal origin about the center of the ligamentous portion of the right cord. It had the appearance of a "mucous polypus."

Nose: Slight nasal obstruction from a hypertrophic rhinitis. The removal of the growth, a matter of no little difficulty, was accomplished by the indirect method—using Dundas Grant's guarded laryngeal forceps. After removal, the base was lightly touched with a bead of chromic acid fused on the end of a probe. Vocal rest and sedative sprays were ordered. The patient made an excellent recovery and is now as well as she was eight years ago, i. e. before the first attack of hoarseness.

Pathological report: (From Dr. Eastes). "This tiny tumor is composed entirely of edematous granulation-tissue covered by necrotic squamous epithelium. It is inflammatory in nature and is not malignant. Neither is there any direct evidence of tuberculosis."

Remarks: No definite cause of the original growth can be assigned, but for its recurrence the constant "hawking" and clearing of the throat associated with post-nasal catarrh is a likely cause of a sub-epithelial hemorrhage. There can be no question raised as to whether or not this growth was tubercular. Repeated examinations of the lungs failed to discover the slightest sign of any tubercular deposit. Von Pirquet's reaction was negative as was also Calmette's opthalmo-reaction. The opinion which I have formed regarding it, and which I think is warranted by the history of the case, is that this is an example of degeneration and absorption of a simple granuloma arising from and around a hemorrhage in the cord. Probably in the course of time Nature would have dealt with it in her own way and it would have ultimately disappeared. The succeeding case is a still further example of this granulomatous type of growth, remaining in this instance as a granuloma.

Case 3: Miss P., a young lady, 30 years of age, consulted me for hoarseness and loss of voice. The onset was gradual and dated back about two years. She stated that "it commenced with a cold which went to her throat." She could think of no other cause. There was no history of syphilis and the lungs were quite healthy, nor was there any family history of tuberculosis. The hoarseness was slight at the commencement and varied from day to day until about six months ago, when, in addition to the hoarseness, the speaking-voice would suddenly go, and the patient found considerable difficulty in breathing and articulation. These attacks of spasmodic laryngitis rarely lasted any length of time—usually only a few minutes. Latterly they have become more frequent and prolonged.

Nose: No obstruction. *Laryngoscopic examination* revealed the presence of an irregular, pinkish, pedunculated growth attached to the left vocal cord, about its middle. There was considerable vascular injection of both cords, but no interference with their movement. The base of this growth apparently extended around the edge of the cord. During quiet respiration the growth moved only slightly with the air current, but its general tendency was to fall between the cords. *Diagnosis*: Papilloma.

The attacks of which she complained apparently were due to the spasmodic contraction of the glottis, a result of irritation from the presence of the growth, (spasmodic laryngitis). Under cocain anesthesia and with the aid of Horsford's epiglottis retractor and Durham's laryngeal forceps, the growth was removed by the indirect method. There was no hemorrhage, but the base was lightly touched with the galvano-cautery. Complete vocal rest and a sedative spray were ordered. Complete recovery and a normal voice resulted. There has been no recurrence of the growth.

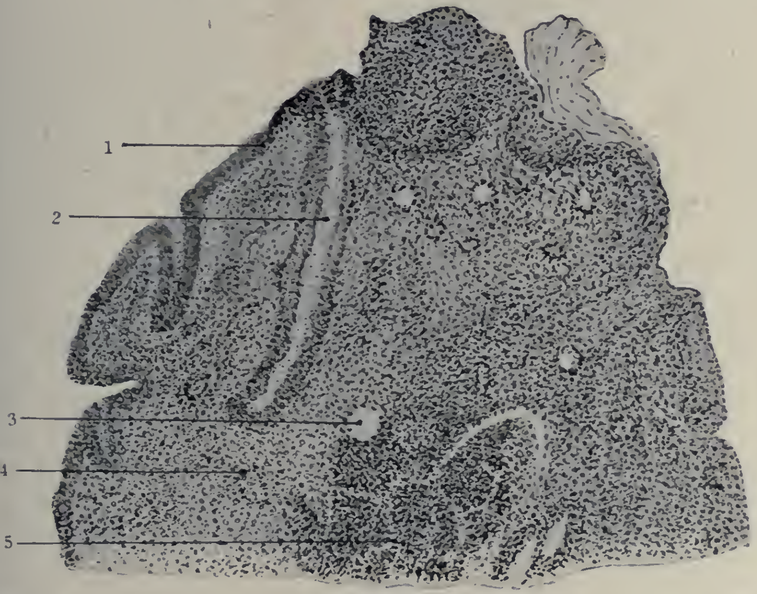

Figure 2. Granuloma. (1) Thin layer of squamous epithelium covering the growth. (2) The blocked duct of a gland. (3) Dilated capillary. (4) Loose fibrous granulation tissue with plasma cells in places. (5) Masses of lymphocytes. (Magnification two-third inch objective.)

Pathological report, 1590, from Dr. Wyatt Wingrave (Figure 2): "This consists of granulation-tissue with a vast number of plasma cells which indicate a very chronic inflammatory process. There are no giant-cells and no bacteria. It is difficult to state what type of granuloma it is in the absence of definite evidence. It is apparently of the simple type and entirely different from No. 1589 (Case 4) as it is undoubtedly inflammatory in nature. There is no sign of malignacy."

Remarks: From the pathological report it is evident that the inflammatory process arose at the time of the supposed "cold." The microscopic examination of the section demonstrated the presence of a distinct tubular gland. Now glands are never found in the vocal cord but are numerous in the ventricular bands. It is obvious, therefore, that the origin of this growth must have been in the ventricular band and not the cord.

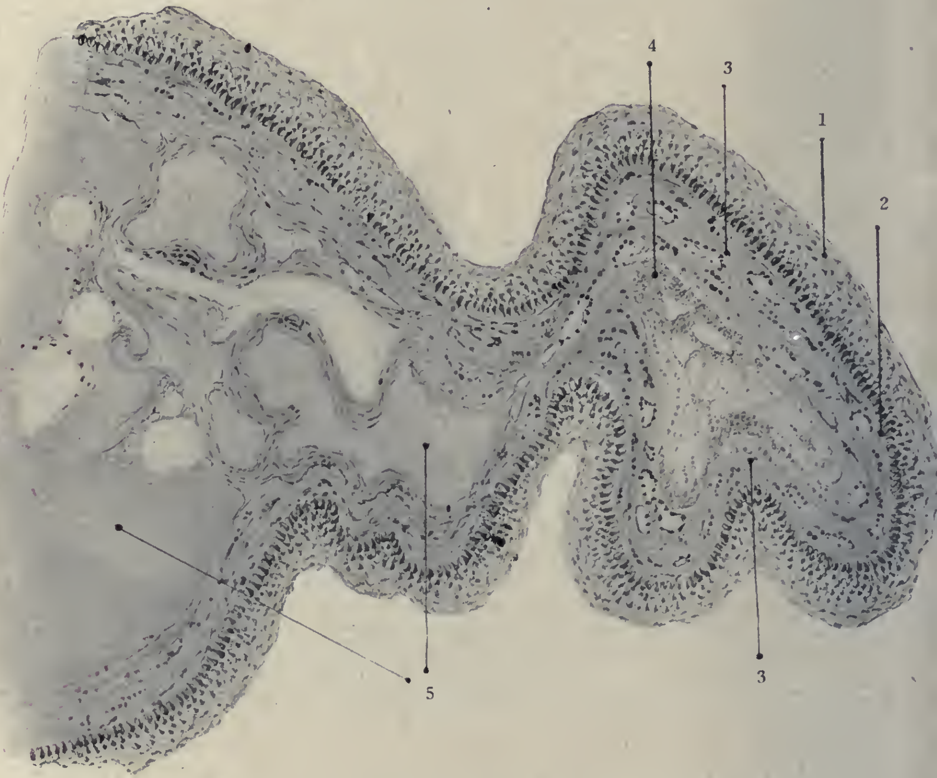

Figure 3. Thrombosed node, (fibroma). 1. Layer of squamous stratified epithelium. 2. Basement membrane. 3. Loose sub-epithelial fibrous tissue containing the vascular channels. 4. Red clot—extravasation of blood, still corpuscular. 5. White clot (endo-vascular) with masses of haematin pigment scattered about in the fibrous tissue around it. (Magnification: Objective one-half inch.)

Case 4: Mr. M., aged 21, was sent to me by Dr. Pryce Jenkins with a history of persistent hoarseness and loss of voice extending over a period of three years. He made a voluntary statement "that the hoarseness commenced with a cold which he neglected" while in America. The hoarseness had continued without intermission since then. The voice was of the typical hoarse-aphonic type with occasional sudden alterations in pitch, (diplophonia). There was no history of syphilis and his lungs were quite healthy, but he was a heavy cigarette smoker.

Laryngoscopic examination: An examination of the larynx soon explained the hoarseness, for attached to the anterior part of the anterior third of the right vocal cord was a largish peduncuiated growth, smooth, vascular and glistening. The growth tended to fall between the cords but on phonation came between them. Owing to the dependent character of the epiglottis a view was not easily obtainable. *Nose*: Marked nasal obstruction from a deviated septum. *Diagnosis*: Benign fibroma.

After cocainizing the larynx the growth was successfully removed with Durham's laryngeal forceps; a small fragment left was got rid of with Grant's guarded forceps. I may say here, that I found Horsford's epiglottis retractor of inestimable service in obtaining a good view of the interior of the larynx. Considerable hemorrhage followed the operation.

Pathological report, 1589, from Dr. Wyatt Wingrave (Figure 3): "It is a typical example of a thrombosed node of the cord, consisting of extensive extravasation of blood into the cellular tissue, old and recent. The old has formed a firm thrombus; the recent is still corpuscular. There is much old hematin pigment but no signs of inflammation."

Remarks: Definite cause—neglected cold. I am of the opinion that the origin of this growth was similar to the previous cases, viz: hemorrhage, inflammation and partial organization. Possibly it has passed through three stages in its formation—a hemorrhage which has undergone complete organization into fibrous tissue but has left small deposits of blood-pigment throughout the specimen, (hematin pigment of the report) with proliferation of the tissues around. A second strain and again hemorrhage (white clot), and a still more recent hemorrhage within its fibrous tissue-substance (still corpuscular). The white clot is characterized by: (1) staining badly; (2) being devoid of erythrocytes (red blood corpuscles); (3) showing signs of organization, i. e. fibroblasts growing in from the edge (see Figure 4); (4) an endovascular condition. I am well aware that all growths do not become organized in this way, for I have recently seen a case in which breaking down occurred and a simple ulcer resulted in what was undoubtedly originally a sub-epithelial hemorrhage. The notes of the case may be worth quoting. Mr. Charles Heath, my colleague, was consulted at the beginning of July, 1911, by a gentleman, aged 58, complaining of "hoarseness." The patient stated that at the coronation of their Majesties, he had vigorously cheered the royal procession as it passed. At the time he felt "something give" in his throat, and immediately became hoarse. He had suffered from hoarseness before, generally after prolonged use of the voice in public speaking. When first seen in July he had been hoarse for about a month. We examined his larynx and found both cords intensely inflamed. About the junction of the middle and anterior thirds of the left cord we found a small ulcer with sloughly-looking base and an area of edema around. In spite of the age of the patient, the non-interference with the movement of the cords, the definite history of the cause of the affection, and the fact that the laryngitis was acute we gave a guarded prognosis. The possibility of malignant disease was thought of, and we decided that should no improvement result in a week we would remove a portion of the edge of the ulcer and submit it for pathological examination. However, a week's rest and treatment performed wonders, and we came to the conclusion removal of a portion for examination was unnecessary. Under suitable treatment the ulcer healed, although a certain amount of thickening about the site remained. The voice greatly improved. I am of the opinion that there had been a sub-epithelial hemorrhage caused by rupture of elastic tissue-fibers, infection of the effused blood by micro-organisms, breaking down of the effusion, and ulceration. It is also quite possible that in a patient of his age (58) the ulcer, if neglected, might in time have become malignant. I have no doubt that simple ulceration of the vocal cords may occur. It has been seen and diagnosed by Sandemann as occurring in chronic hypertrophic laryngitis (pachydermia laryngis) although described by him as rare.[5]

Case 5: Mr. S. was sent home from Singapore to consult my colleague, Mr. Charles Heath, for his deafness. His laryngeal trouble was discovered by accident. At our first examination a roughness was noticeable in his voice and on the question being asked he stated that the voice had been so "off and on" for two years. His business necessitated constant use of the voice. There was a clear history of recent syphilis, and he was a heavy cigarette smoker.

Laryngeal examination: Attached to the edge of the right vocal cord at the junction of the anterior and middle thirds is a smooth, roundish vascular-looking growth, with considerable vascular injection of the cord around it. He also had a chronic laryngitis. No interference with movements. *Nose*: Deviation of the septum to the right. Corrected by a sub-mucous resection later. *Diagnosis*: Benign fibroma.

Under cocain anesthesia I removed the growth by the indirect method, using Durham's laryngeal forceps and Horsford's epiglottis retractor.

Pathological report, 1513, from Dr. Wyatt Wingrave (Figure 4): "It consists of sero-edematous tissue resembling a fibroma covered with the normal stratified epithelium of the cord. There is well marked extravasation of blood into the substance of the growth which is apparently not recent."

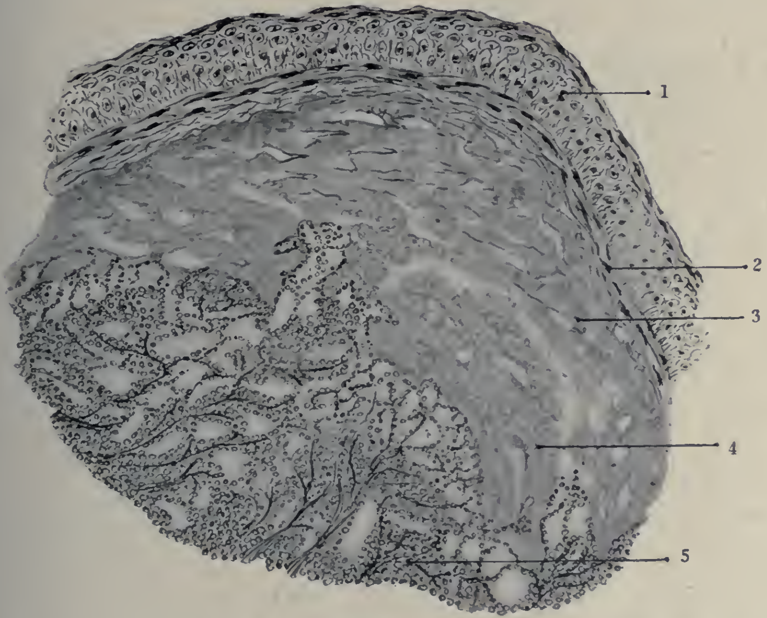

Figure 4. Thrombosed node, (fibroma). (1) Layer of squamous stratified epithelium. (2) Loose sub-epithelial connective tissue containing the vascular channels. (3) Partially organized clot containing pigment. (4) Organizing clot. (5) Blood extravasation still in the corpuscular state. (Magnification: One-half inch objective.)

Remarks: Definite cause—voice user and cigarette smoker. I consider this case on a par with the preceding one (compare Figures 3 and 4). An examination of the specimen and drawing shows it to consist of two distinct parts—a recent hemorrhage still corpuscular, and a much older one in various stages of organization. Probably had this remained it would have developed into a fibrous node or fibroma, the edema being due to physical causes, i. e. position.

Case 6: Mrs. McF., aged 30, was first seen by my colleague, Mr Charles Heath, at the Golden Square Throat Hospital, where she went to seek advice for hoarseness and loss of singing voice. She was an amateur vocalist (contralto) and she stated without prompting "that she had strained her voice." The hoarseness was only slight and not noticeable in conversation, although sudden alterations in pitch were apparent.

Laryngoscopic examination: A minute growth was seen on the surface of the anterior third of the left vocal cord, far forward. The cords were not congested, nor was there even any vascular injection around the growth. The growth was rounded, smooth and of a dark port-wine color. No interference with cord movements. *Nose*: No nasal obstruction but some chronic rhinitis. *Diagnosis*: Benign fibroma.

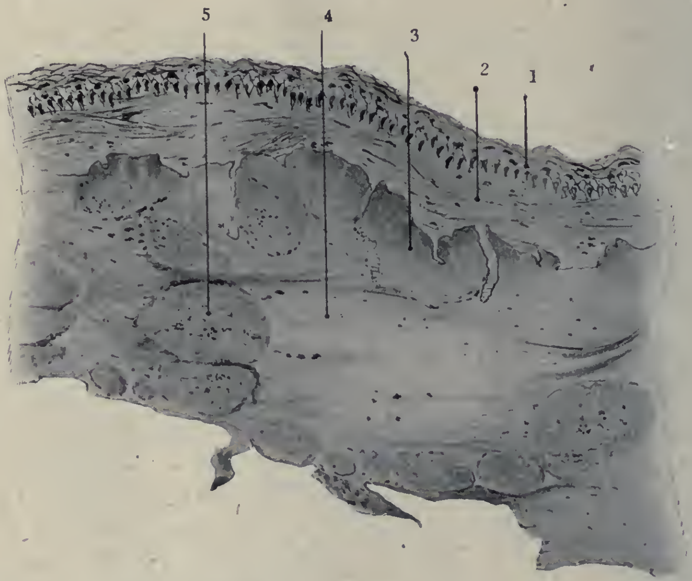

Figure 5. Nevoid polypus. 1. Thin layer of stratified epithelium. 2. Loose fibrous tissue. 3. Homogeneous celloid substance (old fibrin.) 4. Loose fibroblastic tissue. 5. Homogeneous colloid substance with masses of hematin pigment. (Magnification: One-half inch objective.)

I removed the growth with Lambert Lack's laryngeal forceps under cocain anesthesia by the indirect method.

Pathological report, 1552, from Dr. Wyatt Wingrave (Figure 5): "I have examined the specimen from the vocal cord and found it to be a "nevoid polypus" consisting almost entirely of blood vessels embedded in loose sero-edematous connective-tissue, with a few plasma cells. The vessels are dilated and contain red thrombi. It had no elastic cord-elements and therefore was evidently situated superficially."

Remarks: Definite cause—vocalist, known to have had vocal strain. Unfortunately the area illustrated does not show the dilated vessels, but it does show dilated blood space filled with colloid substance (Figure 5, No. 5). It is higher in the scale of growth than Case 5 because it approaches more closely fibrous tissue and is more vascular.

Case 7: Mr. S., aged 35, sought advice for the persistent hoarseness from which he suffered. The hoarseness commenced about two years ago, and at first was only noticeable after prolonged use of the voice. Gradually it became more marked and continuous. When I first saw him the voice was rough and hoarse, and in speaking one noted the sudden alterations of pitch so often associated with laryngeal growths. He knew of no cause for the hoarseness beyond the fact that he had to use his voice a great deal. There was no history of syphilis, but he was a heavy smoker, (cigarettes).

Laryngoscopic examination: Marked chronic laryngitis. Attached to the left vocal cord, about the junction of middle and anterior third, was a roundish, pink, warty-looking growth. The size (estimated) was about 2 mm. by 3 mm. It was not pedunculated nor was there any interference with the movements of the cord. There was also some interarytenoid thickening. *Nose*: Slight nasal obstruction on the left side from an enlarged inferior turbinate.

A diagnosis of benign papilloma was made, and its removal advised. Under cocain anesthesia this was successfully accomplished with Durham's laryngeal forceps. Complete recovery of the voice resulted and there has been no recurrence of the growth.

Pathological report, from Dr. Wyatt Wingrave (Figure 6): "Your specimen from the left vocal cord is a typical squamous papilloma. Nature innocent."

Remarks: Definite cause—voice-user and also subject to that form of chronic pharyngeal and nasal catarrh associated with cigarette smoking and indigestion. The growth was unusually large; larger than papillomata usually are in the adult, and single.

Case 8: Mr. S. M., aged 31, was advised by his doctor in the country to consult me for persistent hoarseness and loss of voice. The hoarseness commenced about eight months ago, when, while suffering from a severe cold, he had an unusual amount of platform speaking to do. He became hoarse at the time and has never since recovered from it, although at first the hoarseness was even greater than it is now. The roughness in his voice is accompanied by sudden alterations in pitch, (diplophonia). He is a plethoric man with a well-marked chronic naso-pharyngitis. No previous attacks of hoarseness nor history of syphilis, nor is he of a "warty" diathesis.

Larynx: An examination of the larynx showed a smallish, granular, or warty-looking tumor growing down into the glottic space from the anterior commisure. Both cords were considerably inflamed but there was no interference with movement beyond that mechanically produced by the growth which prevented complete approximation of the cords. *Diagnosis*: Benign papilloma. Removal advised and carried out later under cocain anesthesia. Durham's laryngeal forceps being used, (indirect laryngoscopy). The base of the growth was then lightly touched with a bead of chromic acid. There was little bleeding.

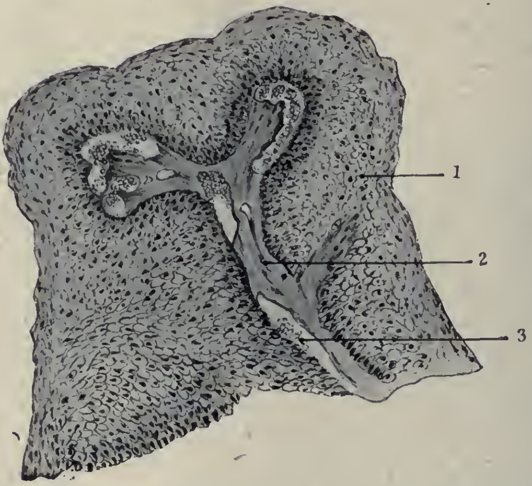

Figure 6. Papilloma. 1. Squamous epithelium. 2. Central core of connective tissue. 3. Blood vessels and blood corpuscles. (Magnification: Objective one-half inch.)

Pathological report, from Dr. Wyatt Wingrave: "The specimen from the larynx is a typical example of the ordinary squamous papilloma. Nature innocent."

Remarks: The cause in this case was undoubtedly overuse of the voice while suffering from an acute laryngitis, resulting in the rupture of an inflamed or varicose vessel (sub-epithelial hemorrhage). These last two cases are typical examples of benign papillomata—warts. In other parts of the body a frequent cause of the development of a wart is irritation and I can see no valid reason why irritation should not be responsible for the development of a wart on the vocal cords. A hemorrhage in or on the cord is bound to give rise to a variable amount of irritation which under certain conditions may result in epithelial hyperplasia. I do not argue that *all* forms of new growth originate in this way, although I am quite convinced that a certain proportion do, one notable exception being the multiple papillomata of children. These seem to me to be more traceable to "developmental remnants."

Conclusion: A word as to treatment. The larger growths should always be removed and submitted to the pathologist. The manner of removal, whether by direct or indirect laryngoscopy, is a matter of personal choice. I prefer the indirect, as I consider with it there is less "shock" to the patient than there is with the direct, although slightly more difficult. The galvano-cautery is only useful for the smaller growths and has the very great disadvantage of destroying the specimen and rendering a pathological examination impossible. Following removal the internal administration of arsenic and iodids has been recommended by some laryngologists (Dundas Grant).

In this article I have not mentioned the paschydermia types of growth which are more of the nature of local hypertrophies than "new growths." No mention either has been made of "singers nodes" or the deposits of tissue associated with tuberculosis and syphilis, as all these forms are in separate classes.

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THE LARYNGO-TRACHEAL MANIFESTATIONS OF THYROID DISEASE.*

BY OTTO J. STEIN, M. D., CHICAGO.

A laryngoscopic examination is much like an ophthalmoscopic examination in that the findings may possibly reveal most valuable information previously unsuspected. The neurologist and internist of to-day recognize the importance of ophthalmoscopic study, but they have not yet learned that a routine investigation of the larynx may reveal just as valuable information. In two diseases in particular is this true. I refer to tabes and thyroid disorders. The general surgeon should find in laryngology a means of identifying the exact condition of the nerve enervation of the thyroid, both before and after every thyroid operation.

It has been my privilege quite frequently to examine the larynx of cases before and after they were operated upon for the removal of part or all of their gland, and the findings were often manifestly interesting, because there were no symptoms present indicating such conditions as were found. A very ordinary instance of this is the unilateral paralysis of a vocal cord. This paralysis is frequently of the complete type; that is to say, both the abductor and adductor nerve-fibers are involved, and as a consequence the position of the cord is "cadaveric." On a number of occasions the cord was found to be paralyzed in the adductor position, its abductor nerve-fibers being the ones involved at the time of examination. Now, in these two varieties of paralysis neither the voice nor the breathing is necessarily changed from the normal, at least not sufficiently to attract attention under ordinary circumstances. Compensation by the opposite healthy cord may within a few days restore to the patient with one cadaveric cord a good voice for ordinary purposes. In a unilateral adductor paralysis, compensation is not so quickly or completely affected, and consequently the harsh, broken quality of the voice is suspicious of larynx changes. If the surgeon performing thyroid operations was to have all his cases examined by a competent laryngologist, he would many times be astonished to learn that a paralysis of one cord existed, and with no larynx symptoms.

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*Read before the annual meeting of The American Academy of Ophthalmology and Oto-Laryngology, Niagara Falls, August 22, 1912.

I have seen an absolutely healthy normal larynx just before a goiter operation present after operation a completely paralyzed cord on one side, resulting in almost no voice at all for five days, but on the sixth day the voice began to return, although the cord still remained in the completely paralyzed condition, and remained so for four months. All this time the girl had a good voice, affected only in its higher register. After four months the cord very gradually began to show motion, although no medical treatment was employed, only vocal exercises, and the cord is now continually improving in its various excursions. In this case I feel positive that the recurrent nerve was not injured by the knife at the operation. The paralysis may have been due to pressure of the inflammatory effusion. It is interesting to note in connection with this case that the patient's chief complaint was difficulty in swallowing, both discomfort and pain. This was entirely relieved by the removal of a large retrovisceral right lobe, extending in behind the trachea and pressing upon the esophagus.

If operators do not examine every one of their patients after operation, they cannot tell whether or not there is a paralysis present, for the voice as well as the breathing may apparently be unimpaired. And for the same reason every case should be examined before operation.

Several factors are to be considered in the production of paralysis in disease of this gland before operation. The size, location, consistency and length of time the gland has been involved are the principal ones. Also some consideration should be given to the general character of the individual's neck. In firm muscular and firm fat necks a contributing pressure is added to the growing gland and injury to the nerve is more likely. The extent to which this may occur can be fully appreciated by looking over the figures given by Matthews, of Rochester, Minnesota. Out of one thousand cases of goiter reported upon as having been observed, there were 289 partial or complete paralyses of the cord. Nothing is said in his report as to what part of this number represents the presence of paralysis preceding and following operation. Dumont, in the *Deutsche Zeitschrift fuer Chirurgie,* March, 1910, reports on 1,148 strumectomies in which there occurred 9 paralyses from solution of continuity, and 7 from temporary bruising the nerve, or a total of 16 lesions of the recurrent nerve. This seems a remarkably small number, and I venture to repeat that if surgeons were to examine all of their cases several times after operation, that the existence of some cord involvement would be found many more times than could be judged merely from absence of symptoms. I have seen this myself so often in patients who have been operated and where the surgeon did not even suspect such a condition and where the skillful performance of the operation could not be held directly responsible for such changes, and yet they existed nevertheless.

Various causes aside from direct injury to the nerve-fibers at the time of operation may bring about the paralysis. Ligature knots on adjoining vessels, the drainage material, confined hemorrhage or serum, and inflammatory exudate have been known to produce a temporary paralysis or paresis. A collateral edema within the larynx as a consequence of the operation can produce sufficient pressure on intrinsic muscles to cause a paresis. Intramural extension in a similar way may be a cause.

Usually the paralysis is of one cord only, and only occasionally are both cords affected. Matthews' report of 289 paralyses in 1,000 goiter cases showed 17 that were bilaterally affected.

The abductor fibers being first involved (Semon's law), the cord is drawn medianward by the adductors, and if both cords are involved there would be great interference with normal breathing. *En passant* of this interesting occurrence is a report by Rosenberg, of Berlin (*Berliner klinische Wochenschrift,* 1897), when upon injecting a goiter case, immediate hoarseness set in. The laryngoscope revealed cadaveric position of one cord on the side of the injection, but a few minutes later the cord moved to the median line and shortly afterwards toward abduction.

In the place of a paralysis an irritation of the recurrent nerve may create spastic action of the cord. This condition takes the form of a laryngismus stridulus, or what is more common, individual groups of muscles are involved, causing sudden severe and paroxysmal attacks of coughing. Such attacks occurring in an apparently otherwise healthy individual, and resisting ordinary treatment, should arouse suspicion of local irritation, from an enlarged or diseased thyroid gland. At times these attacks may vary in character. A fearful constriction seems to grasp the throat, causing a sense of suffocation, and accompanying this there may be intolerable burning and scratching within the throat, and, finally, there comes a severe paroxysm of coughing.

In place of the paroxysmal cough I have had patients annoyed by a chronic cough that is dry in character. These hyperesthetic and paresthetic symptoms indicate involvement of the sensory filaments of the superior laryngeal nerve. Complete paralysis of this nerve causing anesthesia I have never heard of in this connection, although I can understand how it might occur. The manifest size of the gland, as determined by ocular examination or palpation, is not necessarily a definite means of determining the exact size or the degree of pressure it may be exercising. It occasionally happens that the gland is of such enormous size or some accessory or vagrant gland, like the pyramidal lobe, may rise high enough in the neck to irritate the external branches of the superior laryngeal nerve, which supply motion to the crico-thyroid muscle, and in this way the external tensors of the cord may interfere with perfect voice production. The voice in other cases may be changed from different causes. In hypothyroidism it is likely to be husky and heavy, due to a dryness of the mucous membrane. In hyperthyroidism it may have a tremor, and it appears weak and even may be aphonic.

Another condition not so uncommonly found in these disorders is a narrowing of the lumen of the larynx or trachea. The simplest form of this is perhaps that of one-sided abductor cord paralysis. But as the cord seldom remains long in this position, owing to early implication of the adductor fibers in many of the cases, symptoms referable to the slight stenosis may pass unnoticed, but where both cords are involved, distressing and alarming dyspnea may arise.

Normal masses of thyroid tissue known as accessory or vagrant thyroids have been demonstrated within the lumen of these parts, and will cause stenosis. Their presence within the larynx, trachea and bronchi is more frequently due to direct extension through the fibrous interspaces of the walls and perhaps seldom the result of embryological migration, a condition common to other parts. From His' description of the embryology of the thyroid, one understands that the gland at the very beginning is situated between the lingual tubercle and the second and third branchial clefts, which contribute to the construction of the anterior and posterior portions of the tongue. In the development of the embryo the thyroid gland, suspended by a cord, passes down between these two segments of the tongue towards its place in the neck. The suspension cord disappears usually after that, but where it persists it may be pervious and constitute the thyro-glossal duct, emptying at the foramen cecum at the root of the tongue. While in its descent and before its capsule is formed, small pieces may become detached and wander about or are carried away by other neighboring and developing tissue, and thus we have the presence of these accessory and vagrant glands appearing after birth.

The diagnosis of intra-tracheal tumors is probable in otherwise healthy persons between 15 to 40 years old with dyspnea and a flat subglottic, smooth tumor on the lateral or posterior wall of the trachea (von Bruns).

Simple goiters, thyroids of the exophthalmic variety, thyroiditis, both simple, acute and suppurative, may all cause stenosis by direct pressure on the trachea, or on the recurrent nerve, causing paralysis of the cord, or by infiltration of pus, or by pressure on veins causing edema. The exophthalmic type of thyroid disease is the least likely to produce tracheo-laryngeal symptoms, because the gland is more uniformly enlarged, and its size less than in other varieties, besides being softer.

I have seen a number of cases in which the trachea was so severely pressed upon by the rapidly enlarging gland as to produce very serious embarrassment to breathing. The trachea has been found compressed, and its lumen greatly distorted in all directions. But in the average enlarged gland that is soft or its growth has been slow the cartilaginous rings withstand the pressure remarkably well. In some few cases absorption of the rings and of the interspaces permits the growth to invade the interior, and other symptoms besides stenosis are added to this. There is also a variety of enlargement known as retro-visceral, where the gland insinuates itself behind and between other parts; for instance, between the trachea and esophagus, behind the esophagus, and also into the neck. It has been found that by the use of the tracheoscope the presence of such retro-tracheal glands could oftentimes be demonstrated when no other means of examination so clearly defined their presence.

Collapse of the trachea while performing thyroidectomy should be mentioned simply as an interesting complication. Also lateral displacement of the larynx and trachea subsequent to struma operations on one side.

The effects on respiration in some cases are striking. The respiration may be especially rapid on exertion in Grave's disease, due to an associated anemia or a toxic condition of the circulation. Bryson's sign is one of lessening of the chest expansion. In pregnant women with goiter, dyspnea is frequently a common symptom, as well as stridor and suffocating attacks. The dyspnea in goiter is explained by Charles H. Mayo as caused by a peculiar anatomical arrangement of a firm connective tissue-band attached to each side of the cricoid and blending with the capsule of the gland, acting as a sling support.

In myxedema or hypothyroidism there may be hemorrhage from the nose and throat.

The association of a persistent and enlarged thymus gland must not go unnoticed in hyperthyroidism, for it may be responsible for the laryngo-tracheal symptoms. Chavalier Jackson was the first one to demonstrate clinically that tracheal stenosis with attending symptoms can result from an enlarged thymus gland. Malignant disease of the gland, like epithelioma, sarcoma and also syphilis, may cause an invasion of the lumen of the trachea and larynx and produce symptoms of stenosis.

In this connection I cannot do better than to direct your attention to Dr. Mann's "Atlas zur Klinik der Killianschen Tracheo-Bronchoskopie," 1911, and at the same time report from this work three beautifully illustrative cases. One case was a woman, 60 years of age, presenting stenosis of the trachea in the upper one-third, caused by a large substernal goiter with abscess in the center. The tracheal ring-cartilages along about the fifth, sixth, seventh, eighth and ninth were absorbed on the left side where the mass pressed upon the lumen of the tube. This patient complained of a dyspnea and suffocating attacks for a fortnight only, although she had a cough for two years. For three weeks the enlarged gland on the left side of the neck was noticed. The tracheoscope demonstrated the stenosis, the absence of tracheal rings at the site of the gland, redness of the membrane, swelling, and adherent pus.

A second case was that of a man of 50 years, with sarcoma of the thyroid causing stenosis of the upper trachea and esophagus, and extending into the larynx. This growth grew in from the side and behind. The symptoms complained of were dyspnea, dysphagia and extreme hoarseness. The tracheoscope demonstrated just beneath the glottis a bulging of the posterior wall, which increased downward, almost filling the tracheal lumen.

A third case was a man, 50 years of age, who had been well up to within the last year; then dyspnea and occasional difficult swallowing occurred, followed by loss of weight and hemoptysis for the last three months (as much as one-half cupful daily for two weeks). A hard goiter, the size of half a fist, on the right side was made out. The lungs were normal. The right vocal cord was fixed in the midline. Radiography negative. The tracheoscope demonstrated the right tracheal wall bulging, on the summit of which was a red tumor, easily bleeding. A diagnosis of sarcoma of the thyroid gland surrounding the trachea was made. Death occurred from hemorrhage into the bronchi.

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DETERMINING FACTORS IN TINNITUS AURIUM.*

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So little is known concerning the etiology, pathology and treatment of tinnitus, that no apology is needed for the presentation of any discoveries in relation thereto. The following observations extend over a period of about nine years, and deal particularly with those forms of tinnitus which are practically incessant, yet it is apparent that they must also have an important bearing on other forms of tinnitus, and on other aural signs and symptoms.

In analyzing 1000 clinical cases of ear disease, I have found tinnitus present in 56.6 per cent. In the o. m. c. c. cases, 67 per cent; nerve deafness, 50 per cent; suppurative otitis, 33 per cent; impacted cerumen, 50 per cent; polypi, 50 per cent; furuncle and cellulitis of the canal, 33 per cent; eczema, nil. In private cases. fully 80 per cent have experienced the ear noises, and in many it was this symptom alone which brought them to the otologist.

In my investigations, I have refrained from referring to the literature, preferring to take the chance of repetition rather than submit to the intuitive tendency to experiment along known lines. In taking full responsibility for the following, I nevertheless crave criticism, knowing full well that I have but superficially investigated the subject.

Because of extraneous sounds which interfered with many of my experiments, I was led of necessity to the use of places of comparative or absolute quiet, and not only did this facilitate, correct, or confirm observations previously made, but it led to the discovery of the fundamental facts which lie at the foundation of most of the deductions detailed herein.

I found that in normal ears there is constantly present a faint, high-pitched, singing sound, comparable by many persons to the hum of myriads of insects, afar off. This is heard by adults, and by children. It may not be heard by the aged. It is usually more plainly audible to those of a highly nervous disposition, especially neurasthenics; it is less apparent to the phlegmatic. This normal tinnitus (if I may use the term) is not accentuated by closing the ears or applying resonators thereto. A cockle shell held to the ear evidences no sound in absolute quiet.

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*Candidates thesis presented to the American Laryngological, Rhinological and Otological Society, May, 1912.

A tight neckband, causing congestion of the head and neck, may change the loudness or character of normal tinnitus. When first applied, the tinnitus may appear fainter, and later louder; while faintest, closing one or both ears with the finger will have no effect upon the sound; while loudest, closing either or both ears will accentuate it in the ear or ears closed.

Slight extraneous noises obscure this normal tinnitus, so that in most persons it has never been suspected. Certain drugs, as quinin the salicylates, alcohol, etc., cause or accentuate tinnitus, but also during some stages of their action add thereto a factor which reverses the results of all but the last of the experiments before noticed, namely closing the ears may increase the perception of the tinnitus, and the constricting neckband may act similarly. In these cases, if only one ear is closed the tinnitus will be heard louder (lateralized) in the closed ear.

Compression of the air in the external auditory meatus, or Valsalva's method of inflating the middle-ear, dulls the sound of normal tinnitus. Suction, or Toynbee's experiment, appears to cause little change.

Increased perception of sound during meatus closure is brought about in three main ways: (1) by shutting out extraneous noises; (2) by increasing the resonance of the external auditory canal; (3) by reflections from the obstacles to sound exit. For this reason, only those experiments executed in absolute quiet can be relied upon, and when quietude was absent during my observations I have ignored the increase in sound-perception due to the shutting off of vibrations from without the ear.

If a gun is discharged in near proximity to normal ears, a loud high-pitched tinnitus, accompanied by deafness and it may be by pain, will be heard, and this will persist for a time, depending upon the severity of the trauma inflicted and the idiosyncracy of the sufferer. This tinnitus is not primarily affected to any extent by closing the meatus. Firm compression of the air in the external auditory canal appears to dampen it, and suction to have no effect. Valsalva's experiment produces the same results as pressure, while Toynbee's approximates suction. Deafness usually persists during the tinnitus and diminishes in proportion to its decrease.

During forcible contraction of the orbicularis palpebrarum, which causes contraction of the stapedius muscle, and during contractions of the tensor tympani, as during yawning, a neckband dulls the sound made by the muscular contraction. Closing the meati so interferes with the vibration of the structures in and about the ear that I cannot state positively the effect produced. Valsalva, or condensation of air in the external meatus, certainly interferes with perception of the sound made by tensor or stapedius contractions

Weber's experiment executed during constriction of the neck, lateralizes the sound in the closed ear less intensely than in nonconstricted cases. Whereas, in normal ears the sound from a vertex fork is heard louder in whichever ear is closed by the finger, and less loud in this ear on removing the finger—the reverse is true of the opposite ear, namely, on closing one ear the other ear appears to hear less distinctly, and on opening the closed ear, the other ear appears to hear more distinctly. This latter is apparent only immediately after opening its fellow, and is no doubt due to increased fatigue in the more stimulated ear. The sound is quickly equalized between the two ears, following the experiment.

Execute Gelle's experiment, using a double stethoscope in the ears, and connect each tube to a separate rubber air-bag. This arrangement insures an equal closure of both meati, and equalizes the sound from the vertex fork as between the two ears. On compression and on suction by one of the air bags, the sound of the fork will be diminished markedly in the ear under manipulation, and perceived with increased clearness by the undisturbed ear.

Opening and shutting the jaw produces a rumbling sound which is greatly accentuated on closing the external auditory meatus, and diminished during this procedure by applying a constricting neckband.

Before taking up some experiments on abnormal ears, it will be well to briefly discuss the meaning of those just recounted. To my mind, it would be more remarkable if tinnitus were not normally present than that it should occur in healthy ears. The wonderful anatomical and physiological combinations whereby the receiving mechanism is shielded from other than extraneous sounds presents a most fascinating field for study, and although I hold and believe I can prove this to be so perfect as to practically annul sound-conduction to the labyrinth by way of its bony walls, and though this has a bearing on tinnitus, lack of space prevents my treating this subject at this time.

The meaning of no increase in normal tinnitus during meatus closure is that the vibrations detected by the ear are not present in the external or middle ear, at least in sufficient amplitude to be affected by the increased resonance occasioned by the former's closure. In other words, they are almost wholly due to intra-labyrinthine (cochlea) irritation—probably, from the smaller vascular streams. If from vessels of larger size, they would certainly vary with the arterial or respiratory pulse. This they do not appear to do, unless influenced by considerable congestion and in certain individuals. If the intra-labyrinthine pressure is increased by means of air-pressure through the external auditory meatus, by Valsalva's experiment, by a constricting neckband, or by other means, and insufficient congestion occurs in the middle ear to offset the effect of this increased pressure, all sound by air or by bone-conduction is heard less distinctly—hence also normal tinnitus under these conditions is heard with less intensity. The effect of increased labyrinthine pressure is an important cause of the phenomena elicited during Gelle's experiment. It may be brought out most clearly by a hitherto unpublished experiment on the effect of a tight constricting neckband on nystagmus during and subsequent to the rotation tests for semi-circular canal activity. Constriction of the neck vessels may not only distinctly lesson normal nystagmus, both as to time and rapidity, but on alternately applying and removing the band, these effects will appear and disappear. Moreover, vertigo is markedly lessened while the band is operating, and its removal and use are accompanied by increased and diminished dizziness respectively.

So much for the effects of increased pressure in the labyrinth. except to state that sudden increased pressure may cause a tinnitus, distinct from the normal. As for the changed and increased tinnitus sometimes experienced under the influence of the band, this may be presumed to be due to the engorgement of the vessels in and about the ear, and to the loading of the conducting mechanism thereby.

Extra-labyrinthine entotic sounds should be increased by meatus closure, and I have found and reported this to be the case in the ear or ears closed. Similarly during the first stages of drug poisoning, no tinnitus is noted on closing the meati, because the vibrations are not as yet sufficiently intense in the middle and external ears to be appreciably affected by the meatus closure, whereas, later an increase is obtained.

Tinnitus following trauma to the labyrinth from violent aerial concussion usually reacts to pressures, increased resonance, and suction, as does the normal tinnitus. From what has been said beless change will be detected.

The tuning-fork tests in combination with the meatus closure, neckband, Gelle's and other experiments, work out logically along the line already designated, and the noises incident to moving the lower jaw are increased during meatus closure because they are set up mainly in the external meatus and drum membrane, and so respond to any increased resonance brought about therein.

Having briefly discussed the determining factors in the causations and variations of tinnitus in normal ears, we are now in position to better understand some of the vagaries of tinnitus accompanying disease.

Noises from or by way of the pharyngeal end of the Eustachian tube are less clearly heard if the corresponding meatus is closed. This may be proved by swallowing while a tuning fork (C1) is vibrating beneath the nostrils or on the vertex. A distinct increase in sound is apparent during the act, but if the meatus is closed less change will be detected.

Experiments on abnormal ears are interfered with by so many unrecognizable factors that observations and deductions must be reported most guardedly, and yet after carefully testing hundreds of cases, certain facts stand out so clearly that they should be set down, some with more and some with less decisiveness.

Who has not been impressed with the extraordinary fact that tinnitus often seems to bear no relation to the detectable otitic lesions? There is more to this than the mere inability of the surgeon to recognize the otitic etiology of the tinnitus, for cases often present which show little functional or anatomical changes in the ear, and yet suffer from tinnitus to an extent which renders life miserable. These cases, as a rule, have the ear-marks of neurasthenia, and it is their hypersensitiveness which is the determining factor in the trouble. Treatment of the otitis as such accomplishes little or nothing. Again, slight congestions and middle-ear lesions in themselves may induce hypersensitiveness and neurasthenia by causing an increased perception of the tinnitus through the shutting off of extraneous sound, and through the relative increase of craniotympanic sound-conduction, concomitant therewith. It follows that these vicious interdependent reactions tend to mutually increase one another until the inner ear is seriously affected through nonuse, unless one or more of the determining factors are speedily removed.

In many cases of active suppurative or catarrhal otitis, the application of a neckband will cause tinnitus or increase that already present. In these cases, a hyperemia is present, and it would indeed be surprising if added congestion did not cause an increase in the irritation of the eighth nerve-terminals in the labyrinth, irrespective of increased irritation through hyper-congestion throughout the middle ear.

If tinnitus occurs during active inflammatory reaction during or following destruction of the inner ear, it is increased in severity by the application of the neckband.

If congestion in the Eustachian tube is the determining factor in tinnitus, local astringent or other measures diminishing it will be effective, and the introduction into the external auditory meatus of solutions of cocain will affect tinnitus if its anesthetizing or astringent effects are felt by the tissues from whence the irritation originates. This should be kept in mind as a diagnostic aid.

When impacted cerumen is the determining cause of tinnitus, closure of the meatus will produce an increased perception of the sound—unless the cerumen completely blocks the canal, is in considerable amount, or firmly packed, especially against a large portion of the drum membrane. Even so, the tinnitus may be increased if meatus closure is able to markedly affect the resonance of the canal. Slight irritation may be sufficient to cause tinnitus—for instance, the removal of a small particle of dried cerumen, no larger than a pinhead, from the drum, but more especially from or near the processus brevis of the malleus, may be followed by permanent relief from a tinnitus of years' standing.

Impacted cerumen and tinnitus are real dangers, and should be attended to without delay, as their presence, even as such, may not only cause deafness, but by the effect upon and relation to contributing causes of ear disease, they enhance and perpetuate the vicious lesions in the middle ear, affect the nervous system, and influence the inner ear by these means and by non-use.

In many persons tinnitus is troublesome only at night, and when recumbent, with the ear buried in the pillow or when the meatus is filled with a cotton or cerumenous plug. Relief in such cases is facilitated if these determining factors are inquired into and removed.

There is a class of cases in which I have been particularly interested, namely those whose tinnitus is relieved and almost invariably removed by the application of a tight constricting neckband. This class may be subdivided roughly into two main sub-classes: (1) neurasthenic; (2) non-neurasthenic. In the first class I have patients who have worn the neckband for long periods of time, and found satisfactory relief from their tinnitus. It may be that they benefit also from the soothing and soporific effect of the appliance. In the second class, the results of applying the band often seem miraculous, and the patient will exclaim delightedly, "Why! my noises have gone!" and remarkable to relate they stay away if with other appropriate treatment the neckband is continued. I can only explain these results by the quieting effect of the band, by the increase in labyrinthine pressure, and it may be also by the relief of the under-tension in the middle ear, which is brought about by the congestion out-balancing the weighting effects of this congestion on the middle-ear mechanism.

It is commonplace to have the lesser degrees of tinnitus benefited by Politzerization, pneumo-massage, or other methods of treatment, and this benefit is due not only to the restoration toward normal of the air pressures in the middle ear and tube, but also to the coincidently restored normal pressure in the labyrinth. Deafness, tinnitus, and increased bone-conduction return with a recurrence of the retraction of the drum and ossicles. Treatment of this condition demands more than inflation at the hand of the surgeon. Methods must be used which insure to the patient continuous relief, to the end that he may not be on the down grade except for the few hours following his visit to his otologic adviser.

This is important also from the standpoint of tinnitus, for as we have shown, entotic noises may diminish the perception of external sounds as, conversely, the increased audition of extraneous sounds mask those from within.

Tinnitus, in true oto-sclerosis, is influenced sometimes by increased labyrinthine pressure induced by the neckband, but rarely by increased pressures in the external meatus. The effect of increased pressures varies indirctly with the extent and location of the lesions. In nerve deafness, a neckband will diminish tinnitus unless the determining factor of such tinnitus is extra-labyrinthine, in which case it will but rarely lessen it.

I find that, as a rule, tinnitus in abnormal ears in influenced by meatus closure and the neckband, as would be expected from the results of experiments on normal ears; and from my observations on both I am led to believe that much can be learned by submitting patients to the experiments herein detailed, bearing in mind the while the results obtained on normal ears.

In chronic non-suppurative otitis with tinnitus, the following general rules may be tentatively deduced from my investigations: If closure of the meatus diminishes the tinnitus, the determining factors are slight in extent and easily influenced by treatment (usually tubal). If closure of the meatus increases the tinnitus, the determining factors are due to appreciable extra-labyrinthine lesions, and the prognosis is less hopeful. If a constricting neckband increases the tinnitus, the determining factors are mainly in the middle ear, and are more or less influenced by treatment, according to the character of the lesions. If a constricting neckband diminishes the tinnitus, the determining factors are either in the labyrinth or its walls, and are due to reflex irritations or to general conditions, such as anemia, neurasthenia, etc., with or without accompanying middle-ear lesions. The prognosis in these cases is better than appears at first sight. If meatus closure and the constricting neckband have no effect on a marked tinnitus, it is difficult to deduce therefrom reliable information, but negative results, if anything, indicate long-standing or sclerotic conditions, rebellious to treatment. If the neckband diminishes tinnitus, and increased air-pressure in the external auditory canal has no effect, it is probable that extreme ankylosis or oto-sclerosis exists.

As there are apparent deviations from these general rules, other signs and symptoms must of course be considered in diagnosing the determining factors in tinnitus aurium, but I hope the rules suggested will be of interest not only from a diagnostic standpoint, but also and more important, from the viewpoint of therapeutic indications.

Further investigations along similar and collateral lines to those indicated in this report, will, I hope, finally make the otologist master of his bete noir, tinnitus aurium.

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The Causes and Treatment of Reflex Cough. S. Marx, *Ztschr. f. Ohrenh. u. Laryngo-Rhinol.*, Band 65, Heft 4, August, 1912.

The reflex cough due to "plugs" within the tonsillar crypts is characterized by its spasmodic yelling attacks, the accompanying watery secretion from the eyes and the nose, and the occasional expectoration of saliva and pharyngeal mucus at the end of the attacks in severer cases. It may be incited by touching the affected part of the tonsil with a probe or hook. In fifty otherwise normal cases, the writer could not incite tonsillar reflex cough. The treatment consists in repeated multiple incisions into the tonsils and the removal of the plugs. Tonsillotomy is of no avail. In severer cases tonsillectomy has to be resorted to. The writer reports eight successfully treated cases. Glogau.

SOME CURABLE AFFECTIONS OF THE ACOUSTIC NERVE.*

DR. ALFRED LEWY, CHICAGO.

Under this title it is intended to describe a group of cases differing in etiology but having in common a lessened hearing-power for the spoken or whispered voice; for tuning-forks especially by conduction through the cranial bones; and their difference from actual degeneration of the acoustic nerve in that recovery ensues under appropriate treatment.

It is not the intention to consider in this paper hysterical deafness nor acute anemia of the labyrinth, both of which have won considerable text-book recognition, but more especially a form of hardness of hearing of rather gradual onset, due to general anemia of longer standing; to a general systemic depression, or to neurasthenia. The drug intoxications and the toxemias of the various infectious and constitutional diseases which may cause a disturbance of function of the acoustic nerve, as of others, without necessarily resulting in a permanent lesion, will also be briefly considered.

The references to this class of cases, with the exception of drug intoxications and the toxemias of the infectious diseases, in most text-books are casual, and direct reports of such in the literature are not frequent, so that we may infer either that they are rare, which I do not believe, or that they have not attracted much attention. Perhaps the fact that they recover, and no doubt often spontaneously, accounts somewhat for the lack of attention paid to them.

I am of the opinion that cases of what we may call functional depression or asthenia of the cochlear nerve due to various causes are fairly common, either alone or associated with tubal catarrh. It is reasonable to suppose that within normal limits the hearing as well as other functions is subject to variations. In fact, Edelmann,[1] in experimenting on himself with his normal siren (an improved and accurate acoumeter), found such to be the case. In abnormal degree this form of deafness is reported during convalescence from typhoid.[2-3] Politzer,[5] in a foot-note, refers to "Torpor nervi acustici" described by Rohrer as occurring in persons under 50, with otitis media chronica. Urbantschitsch[6] also mentions torpidity of the acusticus, a progressive form associated with middle-ear disease, but says nothing as to prognosis. He also describes fatigue of hearing, "Ueberanstrengung," temporary or permanent, believed by him to be due to cramp of the tensor tympani. The tuning-fork findings are not described. Fatigue of hearing is also described by Hammerschlag,[7] Gelle,[8] Blake[9] (occupational), Lannois[10] and Dench.[11]

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*Read at the meeting of the Chicago Laryngological Society, May 21, 1912.

Ballenger, treating of hysteria, mentions the fatigue symptom (after perception for the sound of the vibrating tuning-fork has ceased, the tone is again heard if the fork is removed for a moment and replaced without having been struck again.) Under the head "neurasthenia," Phillips[13] describes hyperacusis with tinnitus, but says nothing of depression of function. Barnhill and Wales[14] indicate that the symptoms of nerve-deafness may be found in chronic anemias or after exhausting illness and Dench[15] goes a little more into detail on this subject. Grunert[16] mentions deafness due to subacute anemia. Urbantschitsch[6] mentions deafness in myxedema, responding to thyroid treatment; it is also described in nephritis,[17] increasing and decreasing with the anasarca, in recurrent fever,[18] and periodically in malaria.[19] There is also described vaso-motor deafness of sudden onset, associated with redness of the same side of the face and disappearing just as rapidly.

Can we differentiate these recoverable cases from those of organic changes in the nerve by the clinical examination? I think we can, at least with probability, by careful investigation of the etiology and by careful tuning-fork tests. It may sometimes be necessary to supplement these by a short period of observation. Nerve-degeneration is more apt to occur in men; in those whose occupation subjects them to continuous noise; in both sexes past middle age; in young people as the result of one of the infectious diseases, particularly meningitis, mumps, or hereditary syphilis, while in older people acquired syphilis, and later arterio-sclerosis are factors. Osteomyelitis and leukemia are occasional causes. The loss of hearing is usually severe, unequal in both ears except when very advanced, and the loss of the upper tone-limit as a rule, or of other areas of the scale, is marked. In a series of cases of neuritis described by Zytowich,[22] the perception taken all along the scale from C to c^4, was very variable. I might mention here that in six of seven cases of acoustic nerve-degeneration examined by me the vestibular reaction to rotation was subnormal.

In the simple asthenia or functional depression of the cochlear nerve the etiological factor is apt to be a depressing illness, a chronic anemia or *nervous stress;* the loss of hearing not so severe (about 5 feet or more for the whispered voice) and not of long standing, both upper and lower tone-limits nearly normal, except the loss of lower tones when tubal catarrh is associated, and with this there is shortened perception for the tuning-fork through the cranial bones by both Schwabach and Rinné tests. In the neurasthenic form the vestibular reaction to rotation is increased,[23] and the fatigue symptom is present. The association of this fatigue symptom and shortened bone-conduction with tubal catarrh lead to the suggestion that in some cases the internal ear-disturbance may be due to over-exertion in the attempt to hear clearly in the presence of defective conduction of sound. (See case of the piano tuner reported below).

Another condition occasionally giving the findings of nerve-deafness with prompt recovery on removal of the cause is impacted cerumen. It is not to be forgotten that genuine nerve-degeneration may be associated with cerumen. This condition is now being investigated by my colleague, Dr. Sonnenschein.

At this point I should like to offer a suggestion, without, however, sufficient clinical evidence to warrant the name of theory: that a purely local lesion of the cochlear nerve, that is a lesion specifically affecting the peripheral neuron, is apt to show diminished hearing especially in certain areas of the tone scale, while a systemic depression, acting through the sensorial center or possibly through the nucleus of the eighth nerve will show diminished hearing of approximately the same degree for all tones, and may be associated with depression or hyperesthesia of other senses.

I present herewith three case-histories in which the internal ear-disturbance appears to have been of the so-called functional variety.

Case 1: B. B., age 39; occupation, piano tuner; has congenital cataracts and ocular nystagmus. Following "a cold" two months before, had dull pain and feeling of fullness in both ears, accompanied by a noise, like running water. Examination, November 8, shows the following:

Membrana tympani: right and left, retracted, dull. Schwabach: A fork 10 seconds and again 10 seconds on replacement; (fatigue symptom); normal for our fork, 28 seconds. Weber: not lateralized. Rinné: right, +12:33; left, +12:35; normal, +15:35. Whisper: right and left, 10 feet. Low limit: right, G_2 (24 v. d.); left, G_2 (24 v. d.). High limit: right and left normal for c^4.

After inflation the whisper was heard 20 feet in both ears. Fatigue symptom still present. Diagnosis: tubal catarrh: asthenia of the acoustic nerve. Tubal catarrh because of the marked improvement on inflation, and the loss of low tone limit; asthenia acustici because of the relatively shortened bone-conduction by both Schwabach and Rinné tests, and the fatigue symptom. Treatment: inflation, massage; strychnia.

December 13: Whisper before inflation: right, 18 feet; left, 20 feet; Schwabach, 23 seconds; no fatigue symptom present. Low limit: right, C^2, 16 v. d.; left, G_2, after inflation C^2.

Case 2: Mrs. M. W., age 25; for several months has suffered from some pelvic disturbance, the exact nature of which could not be learned. For a month or more difficult hearing and tinnitus which she described as throbbing. Examination, October 16:

Membrana tympani: right, negative; left, negative. Whisper: right, "four" at 4 feet, "six" at 8 feet; left, "four" at 4 feet, "six' at 7 feet. Schwabach: variable, average 15 seconds (normal, 28 seconds.) Weber: left, Rinné; right, +8:18; left, +8:18. Low limit: right, C_2, 16 v. d.; left, C_2 16 v. d. High limit: right, 0.3; left, 0.3; (normal, 0.5.)

This test shows Schwabach about 50 per cent of normal, Rinné slightly more than 50 per cent for both bone and air conduction. No loss of either high or low tone limits, in fact, the high limit is slightly increased in sensitiveness. There was no improvement on inflation at this time. The apparent better hearing for sibilants is not entirely consistent with the tuning-fork tests. No evidence of hysteria. Diagnosis: asthenia nervi acustici.

She was referred to her physician for general roborant treatment, and on November 26 another test showed as follows: Whisper: right, 18 feet; left, 14 feet; after inflation, both ears 22 feet; Schwabach varied from 20 to 30 seconds; Rinné: right, +10:23; left, +15:33. Apparently a mild tubal catarrh had supervened; meanwhile a considerable degree of recovery from the asthenia acustici had been obtained.

Case 3: Mrs. H. A. A., age 30; two children; influenza, followed by double frontal sinusitis two months before, from which recovery seems complete. Now complains of whizzing noise in both ears. Examination made with the Reiner set of forks as recommended by Neumann shows the following:

Membrana tympani: right and left normal. Whisper: before inflation, right, 10 feet; left, 8 feet; after inflation, right, 14 feet; left, 12 feet. Schwabach, 10/15 of normal. Rinné, right, +10/25; left, +10/25; normal, 15/60. C, right, 35/70 of normal; left, 22/70 of normal. c^4: right and left slightly shortened. Diagnosis: tubal catarrh with asthenia nervi acustici, probably due to anemia. Returned to her physician for tonic treatment, under which she recovered.

Of the drug intoxications, perhaps quinin is the best known. The destructive effects of this drug are exerted largely upon the ganglion cells of the cochlea. The degeneration of the organ of Corti and of the acoustic nerve are believed to be secondary effects and the hemorrhagic exudations supposed to be due to agonal convulsions.[24-26] The cases which recover; that is to say, those in which no permanent organic lesion is established, are more frequent, and we can only conjecture that some form of irritation, resulting in depression of function takes place. Probably, judging from the hyperemia of the middle-ear, there is also hyperemia of the labyrinth. It is difficult to say sometimes whether the symptoms are due to the drug or the disease for which the drug is given, but where the disease is not one which produces nerve-deafness, and where the symptoms improve rapidly after withdrawal of the drug, other factors being excluded. one is justified in assuming that the drug has been responsible. Many drugs are reported to have caused deafness with the functional findings of nerve-deafness, and I believe one may safely assume that any of these may cause only temporary deafness when the toxic effect is not too severe.

The frequent use of salvarsan at the present time has brought arsenic preparations to the foreground. The recently reported cases of deafness due to this drug have apparently been cases of permanent injury. Arsenic also affects the ganglion cells[27] as do the salicylates.[28-29]

Alcohol and tobacco toxemias often co-exist. The alcoholic form may be part of an alcoholic polyneuritis. Amblyopia may also be present. The pathology of the amblyopia is a degeneration of the papillo-macular bundle, probably an ascending degeneration due to death of the retinal ganglion cells.[30] Alcoholic neuritis, perhaps more than others may be associated with a conduction deafness due to a catarrhal process. Zytowich claims to have shown[31] that characteristic for the alcoholic form of neuritis is a relative loss of low tones, associated with shortened bone-conduction. Degenerative changes found by him were more marked in the upper part of the cochlea. Alexander states[32] that in chronic alcohol and nicotin poisoning the vestibular reaction to the usual tests may be either increased or decreased.

Other substances reported to have caused deafness are chloroform,[33] iodin,[34] carbon monoxid,[35] oil of chenopodium[36] mushrooms,[37] lead,[38] mercury,[39] phosphorus,[40] silver,[41] carbon dioxid,[42] carbon disulphate,[43] smoke,[44] ergot,[45] morphin.[46]

A case of quinin poisoning seen by me gave the following findings, which are somewhat incomplete on account of loss of the record: The whispered voice is heard 5 feet in either ear; slight improvement on inflation; Schwabach 60 per cent normal; Weber indefinite; Rinné osseous conduction 50 per cent, air 60 per cent of normal; low limit G_2 (24 v. d.); high limit with the Edelmann Galton whistle 0.3 (normal 0.5.)

Patient's history follows: D. W.; aged 40, occupation, bartender, alleged moderate use of liquor; had a cold for two weeks, for which he took quinin, quantity unknown; for a week deafness and noise like rushing water in ears. The quinin was withdrawn; after three weeks the tinnitus was relieved, hearing for whisper 18 feet. This patient disappeared from observation.

Many of the infectious diseases are known to have caused nerve-deafness without suppurative lesion. Unfortunately, most of these, at least at the time they usually come under the observation of the otologist, are irreparable. Undoubtedly earlier recognition will lead to better results. Of these diseases mumps as a cause of deafness is perhaps the best known. Typhoid fever, influenza, diphtheria, scarlet fever, measles, syphilis, rheumatism and herpes zoster are also offenders. Siebenmann[46] and Witmaack[47] describe acoustic neuritis due to the toxemia of tuberculosis, causing a permanent lesion. It is to be remembered that a nerve-deafness during convalescence from a protracted disease like typhoid[48-49] may be due simply to functional depression or asthenia nervi acustici. Of the non-infectious diseases, if I may call them all so, carcinoma,[50] diabetes,[51] leukemia, pernicious anemia, and purpura[4] should be kept in mind in the etiology of acoustic neuritis.

The so-called rheumatic form of acoustic neuritis, the real etiology of which is in doubt except in the cases associated with polyarthritis, is described as coming on rapidly with deafness, tinnitus, vertigo, nausea and ataxia (most of these cases were described before accurate observation of nystagmus was practiced) either with or without associated lesions of the facial and other cranial nerves, and with or without herpes. Under this head Hammerschlag reported a series of cases in 1901.[52] Bing[53] reported a case without static disturbances or associated lesions of other cranial nerves. Some of these recovered and some did not. Bezold[54] in his admirable work, under the general head polyneuritis, describes as group D, those presenting the same cochlear and static disturbances, but makes no mention of associated paralyses or herpes, and makes a favorable prognosis. Similar cases are reported by Zytowich,[55] who includes modern methods of testing the vestibular reaction, and finds it sometimes increased, sometimes diminished. Whether these cases are rheumatic, or belong to the group described by Ramsay[56] as "Acute poliomyelitis posterior of the geniculate, auditory, glosso-pharyngeal and pneumogastric ganglia, that is to say herpes zoster, is a question. As neither the vestibular nor cochlear ganglia govern any nerve terminals in the skin or mucous membrane, affections of these ganglia alone would not cause herpes.

As an example of nerve-deafness (in this case combined with middle-ear trouble), resulting from an infectious disease and responding promptly to treatment, permit me to report the following case of syphilis:

L. H., female, aged 22; deafness and tinnitus of three weeks' duration; tinnitus like bells ringing. Examination, August 10, 1910: Papules in right and left canals. Speech: right, 8 inches: left, 5 inches. Schwabach: A-fork, 70 seconds; (normal, 28.) Weber, left. Rinné right, +10/21; left, indefinite 0/15; (normal, 15/35.) Low limit: left, F♯ 90 v. d.; right, F♯ 90 v. d. High limit: left, 5.00; right, 4.00; normal, 0.5.

Initial lesion present on genitals; macular eruption; mucous patches on tonsils. Treatment: intra-muscular injections of mercury.

October 8, 1910: Whisper heard at 6 feet. January 11, 1911: Whisper at 22 feet; c^4 normal; low limit G_2 (24 v. d.). This case is especially interesting because of the early development of an internal ear affection, coincident with the primary lesion and secondary eruption, because of the condition affecting the external, middle and internal ear, and on account of the rapid response to antisyphilitic medication, particularly of the internal ear condition. There was no complaint of vertigo or ataxia, and we found no evidence of hysteria.

Politzer has said that the auditory is the most vulnerable of all the cranial nerves. Of 144 cases of deafness due to non-suppurative causes observed on Dr. Norval Pierce's service at the Illinois Charitable Eye and Ear Infirmary, and in patients of sufficient age and intelligence to permit accurate tuning-fork tests, fifty-seven were cases of nerve-degeneration, and thirty-five others showed nerve-deafness as an element. This appears to be a larger proportion than one ordinarily sees in private practice, and, of course, does not include the cases of tubal catarrh so common in children with adenoid hypertrophy, but it shows the importance of more attention to this phase of deafness.

By careful attention to the cause of nerve-deafness, by systematic and accurate functional tests leading to earlier recognition of this condition, I believe we can learn to distinguish the curable from the non-curable forms, and particularly may we learn to avoid those errors of treatment that arise from inaccurate diagnoses.

In conclusion, I wish to express my thanks to Dr. Norval Pierce who first called my attention to recoverable forms of nerve-deafness and to whom I am further indebted for his teaching and advice, as well as for the opportunity to study patients at his clinic, to Dr. Robert Sonnenschein for assistance in tuning-fork tests, and to Dr. Maximilian Meinhardt, for the reference of interesting cases.

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Anakinetic Re-education of the Ear by the Electrophonic Method.

O. Raoult, *Arch. intern. de Laryngol.*, March-June, 1912, p. 413; and *Rev. med. de l'Est,* April 15-May 1, 1912.

Since March, 1911, 71 cases were treated. The case-histories of 20 patients are given upon whom this method was used. In cases of otosclerosis with nasal lesions, the latter should be attended to before the re-education is begun. Cases still in the presclerotic stage are most benefited. Ed.

Phlegmon of Left Orbit Following Injection of Paraffin in Right Nasal Fossa.

Pistre, *Rev. hebd. de Laryngol.*, June 1, 1912, p. 641.

Girl of 28 years complaining of ozena, received injection of paraffin into left nasal fossa and was greatly improved. Month later injection into right side, followed in one week by phlegmon of left orbit, severe coryza, intense headache, vomiting, fever, lancinating pains and complete ptosis in left eye; vision undisturbed; orbit explored but no pus found; drained. Recovery in three weeks. Author feels that infection possibly took place through blood channels.

Ed.

SOME ETHICAL PROBLEMS CONFRONTING THE EYE, EAR, NOSE AND THROAT SPECIALIST.*

DR. LINN EMERSON, ORANGE, N. J.

A recent editorial in the *Saturday Evening Post,* says: "The Unremunerative Professions: From a high authority, President Pritchett of the Carnegie Foundation, we learn that the medical profession scarcely pays now and tends to pay even less. It 'is becoming more and more a profession to which men give themselves from ideals of public service, recognizing that the average practitioner is to obtain little more than a comfortable living, and in many cases not even that. The parent who seeks for his son a remunerative occupation should look elsewhere."

Everybody knows that teaching does not pay and preaching pays still less; while literature, if you measure the total bulk of time expended against the gross receipts represents a positive deficit.

There remains the law, in which a sufficiently agile youth may now and then overtake a fortune; but the grand prizes are very few and the average income is about equal to that of a good carpenter.

Thus, of the old professions, none pays. A diligent and skillful man may make a comfortable living and keep up the premiums on his life insurance. Why, then, do practitioners of the learned professions persist in trying to make them pay? How much they might simplify professional life by going in frankly for "ideals of public service" with a reasonable pension. Probably, as a matter of fact. there are more furtive socialists among professional men than professed ones among the workingmen.

Ethics and morality are largely chronologic and geographic. The machine politics of the past two or three decades are now censured by all good citizens. The immoral conduct of the Mormons, the Turks, or the patriarchs would soon land one in jail in the State of New Jersey. So has the ethics of medical practice changed in the past forty years, and even now there is a marked difference in the ethical standards of different localities notably in the city and country, and in the East and West.

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*Read at the meeting of the Academy of Ophthalmology and Oto-Laryngology, Niagara Falls, August 20, 1912.

My preceptor maintained that there was no necessity for a code of ethics as the ethics of medical practice should be the same as that governing the relations of one gentleman with another.

The question naturally arises as to what qualities entitle one to be called a gentleman. "A gentleman is an individual whom all other gentlemen concede to be a gentleman" seems to be about as accurate a definition as we can secure. To love your neighbor as yourself and to do as you would others should do unto you is the ideal, but so far as I know, no one on earth has attained such perfection save the man of sorrows himself.

The competitive spirit and the attempt to make the practice of medicine "pay" is the principle cause of the necessity of a medical code of ethics. This is fostered by the low standard of medical education prevalent in this country.

Up to two years ago we had in this country more medical schools than were to be found on the whole continent of Europe; a large number of these were purely commercial institutions with practically no standards, sustained chiefly by clever advertising methods. As a result we have a large surplus of uneducated, ill-trained practitioners. We have four or five times as many physicians in proportion to the population as has Germany or England.

The remedy is obviously higher educational requirements. The man who possesses a college degree before entering upon the study of medicine is much more liable to be imbued with the "ideals of public service" than the one recruited from the ranks of the "butcher, the baker, and the candlestick maker."

Dispensary and hospital abuse is another of the principal reasons why the practice of medicine does not pay. After an experience of many years, I venture to say that at least one-third of the patients coming to the eye, ear, nose and throat clinics in our larger cities can afford to pay for treatment. To be sure, in many instances. they cannot afford to pay the fees of the eminent specialists at the head of the clinic whose services they expect to receive free of charge, but they can afford to pay the usual fee of the poor, struggling junior who actually does their work in the treatment or refraction rooms.

In New York State a law has been passed making it a misdemeanor to apply for free treatment when the applicant can afford to pay, but who ever heard of an attempt at its enforcement. The reason is obvious. The hospital boards are made up of laymen and eminent members of our profession whose sole interest is to make the institution great. Patients are necessary and the fact that they are unworthy of free treatment is a matter of little moment.

After all, this is nothing more nor less than the survival of the fittest. The eminent members of our profession get most of the desirable cases in their private practice and treat the middle class and poorer work in their hospital and clinics without giving the slightest thought to the rights of their less fortunate brother.

The exclusive special societies will not permit their prospective members to designate their special practice in any public manner whatsoever, yet if Jno. D. Robafeller has a cataract removed or Helen Gold appendicitis, the attending surgeons issue bulletins at almost fifteen minute intervals.

As Lydston pertinently remarks, no one in the medical profession is permitted to advertise except quacks and eminent members of the profession. Is it any wonder that the under-dog says the code is a fence erected by the big fellows to keep the little fellows out?

While many of my hearers may resent these plain words, they are facts not to be gainsayed and we owe it to ourselves and our profession to give them serious consideration. I would urge every member of our profession who has "arrived," to keep fresh in his mind his early struggles and hardships, and to remember that the crumbs from his hospital "table" may be a living for some struggling young member of our profession.

The nationalization of medicine is suggested as a possible outcome of the doctors' revolt against the Lloyd-George National Insurance Act. Dr. Rentoul outlined before the British Medical Association at Liverpool, a scheme for a public medical service, organized, controlled, and worked by doctors. He said he thought that the government should make the employment of all doctors a branch of the civil service, adding that the nationalization of medicine was not as far off as some thought. The state or municipalities already appoint medical officers in the army and navy, under the Poor law in prisons, and for lunacy and other institutions. The trend of the discussion which followed was generally in favor of Dr. Rentoul's suggestion.

It naturally goes without saying that the specialist should be governed by the same code as that governing the general practitioner and the code formulated by the American Medical Association should be carefully studied by every eye, ear, nose and throat specialist. There are, however, some problems confronting the specialist with which the general practitioner does not have to deal.

The general practitioner must be licensed as such by the state before he may practice, but no such public safeguard restricts the specialist. Any person who chooses may call himself a specialist: the only restriction lies in the character of the individual.

There are so many pseudo-specialists that the first and most important ethical question every man should ask himself is, "Am I a real specialist; am I competent; am I what I represent myself to be?" If he cannot conscientiously give an affirmative answer he cannot ethically practice as a specialist, and should fit himself by further preparation.

Dr. M. M. Cullom (*Southern Medical Journal,* February, 1912) says: "There is a time-honored tradition in our profession that one shall only take up a specialty after years of general practice. With this I do not agree. The best time to take up special work is upon completion of an interneship in a general hospital the year following graduation."

The best answer to the doctrine of years of preliminary general practice is given by those men one sees in every large special clinic endeavoring to master the intricacies of special work long after they have passed the age of receptivity and enthusiasm. The effort required of many of them to assimilate the simplest elementary facts is little short of pathetic.

A man should begin his life-work before he is thirty, and the sooner he can begin after the necessary preliminary training the better. Years of preliminary practice would result, generally, in one of two things. A man would become so absorbed in his work if successful, that he would have no desire to change it. If not successful he would probably find the same experience awaiting him in another line of medicine. There are, of course, notable exceptions to this rule, but generally speaking, I believe it will hold

I am a firm believer in the most rigid preparation; the ideal preparation is a collegiate course leading to a degree, followed by fours years in a medical college, a year or two years in a general hospital, and then the special line, followed with all the earnestness and enthusiasm that a well-trained mind can bring to bear upon it.

Dr. Hamilton Weir (*Northwest Medicine,* September, 1911) thus defines a specialist: "I consider a specialist to mean a graduate of a responsible medical school, a qualified, licensed practitioner who has perhaps before, but certainly after graduation, further pursued the study of a certain branch of medicine or surgery, and who limits his practice strictly to that chosen department and refuses or refers to another, any and all practice not properly within his limited line. Further, one who refrains from prescribing outside his specialty even for patients under his care if they are referred to him by a general practitioner, and who refuses under all circumstances, except possibly in emergency or in simple humanity, and this without remuneration, calls or demands for general medical or surgical attention."

To this strict interpretation some may object, and it is probable that many who consider themselves specialists and are so accepted by the profession and laity, would fail to fulfill its requirements by a large margin, but I contend that any interpretation less strict would be unjust to the general practitioner and that its honest fulfillment is necessary to proper professional conduct, to the rights of both specialist and practitioner and in their attitude and service to the public.

I agree most emphatically with Dr. Weir in his strict interpretation of the province of the specialist, and to those who may plead for greater latitude I say not only is it right, but that it pays.

The general practitioner feels his practice is his own: his patients are the assets he has accumulated by a life-time of work and devotion.

The criticism most frequently heard of the specialist is that he oversteps himself and treats the patient for some condition outside his special field or interferes with the treatment being given by the family physician. To be sure, that is often owing to the failure of the patient to fully explain what is being done by the family physician. One or two of my gravest misunderstandings with general practitioners have been due to deliberate prevarication on the part of the patient.

I find it to the advantage of the specialist, the family physician, and the patient, to have most cases complicated by syphilis, rheumatism, cardiac and renal diseases, arterio-sclerosis, etc., treated by family physician, with the specialist seeing the case as frequently as is necessary in the capacity of a consultant.

While the specialist is occasionally guilty of infringing on the general practitioner's field, the general practitioner is more often guilty of attempting to get on without the aid of the specialist. In this particular instance the patient is the greatest sufferer. We often see otitis media from failure to recognize and remove adenoids, mastoiditis from neglected otitis media, glaucoma treated for two weeks with atropin, and posterior synechia following iritis in which no mydriatic was used.

We also see a constant procession of cases in which adenoids and tonsils have "returned" after their removal. When these cases occur in the practices of our friends and confrères who are daily sending us patients it often requires the greatest diplomacy to serve the best interests of the patients and keep the good-will and friendship of the delinquent. The opinion prevails among general practitioners that the removal of adenoids and tonsils is a simple procedure. Thus it may be readily seen that whether the specialist or the general practitioner infringes it is the specialist who suffers.

To keep the good will of both the patient and the family doctor, the specialist must certainly be as wise as a serpent and as harmless as a dove. The general practitioner is quite independent of the specialist; so he can easily take the risk of offending him, whereas the specialist must be most careful not to offend the family physician.

A child with catarrhal otitis due to adenoids is sent by the general practitioner who does his own adenoid and tonsil operations. If the specialist is unwise enough after making the diagnosis, to go ahead and arrange for the operation, he may find this man sending his subsequent consultation work elsewhere. On the contrary, if a family who brings an adenoid case to you of their own volition, ask to have the family physician give the anesthetic, and you consent and arrange for the operation, what is your chagrin a few days later to learn that he is to, or has already performed the operation.

How do you retaliate? By smiling and looking pleasant: you cannot afford to do otherwise. I, of course, understand that these conditions obtain more in the smaller cities such as the one in which I practice, and that in the larger cities the specialist is more of a free-lance and considers everything that comes under his observation fair game with less consideration for the family doctor unless the case is a referred one.

Many specialists are very careless in reporting on referred cases. This is a courtesy to which the family physician is entitled. I have a space on my record cards for the name of the physician by whom the patient is referred and when a written report is made it is checked the same as in posting accounts. Many physicians have expressed gratification at this practice and one man told me recently: "If I send a patient to you and I do not hear from you I know he has not followed my advice."

Patients often fail to state by whom they are sent unless explicitly asked if they are sent by some physician.

In special as in general practice we are sometimes justified in deceiving a patient. In cases of incipient cataract in the aged it would often be positive cruelty to tell the patient that they have cataract. It is, however, wise to protect yourself by informing some member of the patient's family, and even then one sometimes comes to grief and is rated as incompetent, when the patient goes somewhere else and is told the truth.

In rare instances one is justified in "lying like a gentleman" and assuring the patient they are not suffering from the malady which is present.

It seems scarcely proper that I should close my paper without a word on the subject of accepting or giving commissions. This subject has been so thoroughly discussed that words seem almost superfluous. It would seem that every honest and fair-minded man would appreciate the chain of possible evils that might follow this most reprehensible practice, but I blush to say that it exists to a considerable degree. It is but another way of attempting to make the practice of medicine pay, disregarding the patient's welfare.

The specialist is accused of being narrow and seeing the world through a tube. The oculist gives everybody glasses, the rhinologist cuts or saws at your nose, and the otologist is over-hasty in performing a mastoid operation.

Let us be conservative, putting ourselves in the patient's place and asking what we would have done to ourselves or our loved ones under similar conditions, and making the patient's best interest the paramount issue at all times.

Metropolitan Building.

Malformations of the Olfactory Apparatus in Man. PERNA, Jubilee Book of PROF. AUGUSTO MURRI, 1912.

The author describes a malformation which consisted in a congenital bilateral absence of the entire olfactory tract in a twin of 11 months who died of broncho-pneumonia and who, during life, had had a facial paralysis and atrophy of the left ocular orbit. The author considers this malformation the result of an incomplete development of the cerebral portion of the olfactory apparatus.

ED.

EXTRA-DURAL ABSCESS COMPLICATING FRONTAL SINUSITUS.

DR. RICHARD H. JOHNSTON, BALTIMORE.

Gerber, in his book "Komplicationen der Stirnhoehlenentzuendungen" records thirty-one cases of extra-dural abscess with frontal sinus disease of whom the majority were females. The abscess was for the most part on the right side. In eighteen patients the posterior wall of the sinus was affected and in sixteen of these there was a more or less extensive necrosis. In sixteen cases the abscess was discovered at the first operation. From the frequency of frontal sinus disease it is remarkable that this complication is not seen oftener.

Mr. J. D., 49 years old, was referred to me by Dr. Hiram Woods for headache and edema of the upper lid on the right side. A month before I saw him he had an attack of "grip" which was followed by the headache, at times so excruciating that morphin was the only thing that would give relief. Two weeks from the onset of the headache, the upper lid began to swell. He consulted Dr. Woods who diagnosed frontal sinus disease as the cause of the edema. He was advised to come into the Presbyterian Hospital for the removal of the middle turbinated body and the intra-nasal opening of the frontal sinus.

The character of the pain made me suspect that he had something more than a simple sinusitis. I removed the middle turbinated body and opened the sinus under cocain anesthesia. Despite free drainage the pain did not let up and I advised an external operation to see just what the condition of the sinus was. Under ether the Killian operation was performed. The sinus was large and roomy and the mucous membrane covered with granulations.

The entire posterior bony wall was practically destroyed and the dura, covered with granulations, presented in the opening. The edges of the bone were irregular and rough indicating rapid necrosis. The diseased membrane of the sinus was carefully removed; the dura was left alone since the abscess seemed circumscribed. Two stitches were inserted in the skin-wound below. The sinus was drained with gauze and left wide open. The patient recovered from the operation but did not regain strength rapidly. The wound was dressed daily and progressed favorably.

The edema of the lid, however, did not disappear. Two weeks after the operation I was taken ill and was forced to give up hospital work for a time. Dr. L. J. Goldbach kindly took charge of the patient for me. Some two or three weeks later he telephoned me that a suspicious growth had developed in the sinus and was rapidly increasing in size.

Under ether he removed as much of the mass as possible and found that it seemed to originate at the site of the extra-dural abscess. Miscroscopic examination showed a typical round-cell sarcoma. At the operation hemorrhage was severe and was controlled with difficulty. The patient recovered from the second operation and decided to return to his home in Cumberland. I did not see him again until the latter part of May when the large bleeding tumor left no doubt as to the diagnosis and prognosis. After the second operation iodid of potassium was given as a forlorn hope. Death came the latter part of August. The first operation relieved the pain and the patient was more comfortable for a time. The edema of the lid grew gradually worse until finally it hung down over the cheek like a large pouch. The combination of extra-dural abscess and sarcoma is unique and I have not found a similar case in the literature. The growth must have originated at the site of the abscess though there was certainly no sign of it at the first operation.

The diagnosis of abscess is difficult and usually impossible. The symptoms are generally those of the causative disease as headache, fever, suppuration etc. or of a more serious complication caused by the abscess as dizziness, slow pulse, vomiting and convulsions. Crossed paralysis, epileptiform convulsions and aphasia by left-sided abscess have been observed so that a diagnosis from brain abscess is often impossible. Sometimes there are no symptoms and the abscess is found at operation or autopsy. In a case reported by Hecht in which the pus extended almost to the auricle there were practically no symptoms. Laurens and Coakley saw convulsions and epileptiform attacks as symptoms; Tapas and Denard dizziness; Roepke slow pulse; Mayer stiff neck. Optic neuritis was observed in Lazzaraga's case. Nystagmus has not been observed. In the patient seen by me there were no definite symptoms on which a diagnosis of abscess could be made. The headache was severe and constant and the patient seemed slow of speech with a thick tongue. His mind was constantly on his pain.

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FIBRINOUS RHINITIS.*

DR. VIRGINIUS DABNEY, WASHINGTON, D. C.

The mass of conflicting opinions and vague descriptions with which the literature touching this disease is cumbered could in large measure have been prevented had there been a clear, concise definition before the writer of each paper to act as a guide. This unscientific method obtains in the vast majority of the articles, and is surpassed only by the lack of systematic bacteriologic enquiry in the cases reported. Thus, one observer, in reporting a case before the British Laryngological and Rhinological Association, had the temerity to say "from the complete absence of any general symptoms I regarded this case as one of croupous rhinitis;" whereat, be it said to the credit of one of those present, he was immediately questioned as to the bacteria found. He replied that he had examined the membrane for histologic structure only! And so it goes throughout the long list of reports; hence the obscurity which has beclouded this rare, but none the less distinct disease since the first report, whether this credit belongs to Schuller or to Isambert, or whether the date be 1851 or 1855. These are two points about which the various writers are pleased to dispute.

Definition: From a close study of all the cases reported, and from a still more thorough investigation of my own, there seems to me no reason why the absence of the Klebs-Loeffler bacillus should not be the *sine qua non* of the disease under discussion here. Hence, the disease known variously as croupous, membranous, pseudo-membranous or fibrinous rhinitis is an acute inflammation of the mucous membrane lining the nasal cavity, accompanied by a deposit of fibrinous exudation, which forms a membrane adherent to the mucous surfaces, such membrane not exhibiting the bacillus of diphtheria, nor due to the action of caustics, the cautery, traumatism or the presence of a foreign body. For purposes of study and treatment, if for no other reason, it is my belief that all membranous diseases of the air passages which show the Klebs-Loeffler bacillus should be classed as diphtheritic, and by the same reasoning, all not showing that organism should be regarded as fibrinous, or if a more descriptive term be desired, as pseudo-membranous.

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*Read at the meeting of the Society of Ophthalmologists and Otologists, Washington, D. C., October 18, 1912.

In this connection, Masucci deprecates the use of the word croupous, on the ground that it is symptomatic and not scientific; hence he suggests pseudo-membranous. His paper is clear, scientific and logical, and a distinct step forward in the study of this disease, and with most of his opinions I find myself in complete accord, though I did not know of his solid contribution to the literature till I had read some twenty others, none of which showed the disease to be a pathologic entity.

Etiology: Here as nowhere else is it important to have the demarcation between this disease and diphtheria well defined, else it would be hopelessly confusing to try to attribute the process to any specific organism. Thus, Felsenthal in his apparent doubt as to this distinction does not aid us in arriving at any conclusion, though the pathology of his paper in other respects is good. He thinks the Klebs-Loeffler bacillus is present in all cases, whether shown or not; whereas, Eeman and Bayer in a joint report admit that they recovered out of all cases only eight specimens of the diphtheria bacillus, though they rather incline to the belief that fibrinous rhinitis is due to this germ. In reporting a case of supposed fibrinous rhinitis Gill and Gillies give the history of a diphtheria, perfectly ordinary save in the length of convalescence, showing enlarged glands and the bacillus. Campbell refers to the fact that Sedziak reported 50 cases occurring between the years 1887 and 1892, and he himself adds to this number 70. Out of this total of 120, 80 were subjected to bacteriological examination which revealed 65 cases of Klebs-Loeffler infection (65 diphtherias, in other words), and 15 fibrinous rhinites. The recrudescence of an old lues rather obscures the case that Cartaz reports, though it did not show the bacillus. The attentuated form of this organism he thinks causative of the disease, but he quotes from the findings of other observers as follows: Meyer found the K.-L. in 13 out of 31 cases; Concetti, in all of 5; Ravenel, in 7 out of 10; Eeman, in all of 11. Ravenel's later investigations show 77 cases, in 41 of which bacteriological examinations were made, showing 33 specimens of the K.-L. bacillus. His conviction that some of the cases are due to the pseudo-diphtheritic bacillus, and that this is the same as the K.-L. does not find support in the thorough and convincing work done by Dr. Alice Hamilton of Chicago. Moreover, my own investigations of this interesting bacillus in connection with its causative influence in chronic middle-ear suppuration proved quite the reverse, as guinea pigs were injected to establish this very point. In distinct relief from all this indecision, Cassellberry bold-ly states that all pseudo-membranes are not due to the K.-L. bacillus. He asserts that Meyer could find only 13 cases out of 22 careful examinations which even suggested the bacillus. He says the staphylococci and streptococci were present, if not causative in the other cases. Inasmuch as it has been shown conclusively by Gross of the Children's Hospital of Boston that 8 per cent of children out of a group of 300, whose throats he cultured weekly, had the K.-L. bacillus present without any symptoms whatever, we must proceed with a great deal of caution to state that a condition which shows this organism is due to its presence. Dunn's case is of no value in determining etiology as no bacteriological examination was made, and that of Peck must be ignored for the same reason.

From all of this we deduce that the cause is not known which produces fibrinous rhinitis. In my cases I repeatedly found the staphylococcus aureus in pure culture, never the Klebs-Loeffler in any form, and, as this baccillus is not difficult of recognition even in its perverted forms, failure to find it may well be taken as evidence that it is not present. Once I secured the streptococcus from the lenticular membrane dotting the tonsils, but this organism is often in normal throats, especially in the tonsillar region. Of predisposing causes we know somewhat, as early youth and infancy are the ages at which nearly all cases occur. Likewise, the constitutional nature of the disorder is disclosed by the avidity with which it seizes on those children who have colds, are exhausted or have recently recovered from any sickness, especially of a febrile nature. The absolute absence of all organic disease associated with or following fibrinous rhinitis is invariable and of interest, but it is not mentioned as corroborative evidence that the disease is separate from diphtheria, since this latter itself is not always distinguished by organic changes.

Morbid Anatomy: Chiari devotes considerable space to the description of the appearance of the membrane which he says occurs more often in the nose alone, but is not unknown in the pharynx. Isambert in his valuable early report characterizes the disease as "pultaceous angina," taking the name from the heavy membrane in the pharynx, but he has little to say of the infection of the nose. He notes the absence of glandular involvement as being especially remarkable when the location and extent of the morbid process are considered. He appears to think the degree of severity of the disease is due to the quality of the membrane, and the penetration of the process into the sub-epithelial layer. Thus, though Klebs did not discover the bacillus for thirty years after this observation, yet

Isambert shows himself a close observer, as unconsciously he is separating diphtheria from fibrinous rhino-pharyngitis, as it is now known that the non-diphtheritic (i. e. "fibrinous") membrane, unlike the diphtheritic, does not send any processes lower than the epithelial layer. In a contribution which contains little that will be accepted by most rhinologists, Wishart quoting Walsham on "nasal obstruction" says that the membrane is never observed in the fauces, a dangerous statement to make of a disease which has offered so few opportunities for observation. In addition to the other laryngologists referred to here as having seen it in this location, one of my cases had it well marked in the rhino-pharynx and fauces. Posey and Wright are somewhat more cautious when they say that extension to the naso-pharynx is almost never seen. While those who have investigated that point in the morbid anatomy agree that the membrane does not attach itself deeply, a fact Isambert first established, and one mentioned by Bulson, and Long, yet none the less its detachment as a rule produces hemorrhage. Hence, most observers would take issue with Macdonald when he states that the "membrane may be removed without difficulty or hemorrhage."

Symptoms: Potter regards the lack of susceptibility to cocain shown by the turbinates as so constant and so marked as to constitute one of the symptoms, and to be even of diagnostic import. Bosworth has remarked the same peculiarity, but reports the symptoms in his cases as so much more severe as to lead to the natural suspicion that there was diphtheria under observation and not merely fibrinous rhinitis. He mentions frontal neuralgia, high temperature and loss of the sense of taste and smell as characteristic of his cases. I have been struck with the unnatural pallor of the mucosa, especially as I expected to see an active inflammatory condition, as one case came into my care two days after the first symptom. This anomalous condition is recorded by Macdonald also. The bleeding on forcible removal of the membrane and its speedy reforming are fairly constant symptoms, and ones on which Glucksman lays stress in his able monograph. Dixon reports epistaxis as a prodrome, but sneezing, discharge of mucus, fullness and blocking of the nares is the ordinary course, though occasionally a degree or two of temperature accompany the early feeling of vague discomfort about the nose and throat, such as is seen in an ordinary coryza. However, one of the most remarkable facts in connection with this disease is the apparent absence of any definite prodromal or accompanying subjective symptoms; hence the diagnosis rests on the presence of the membrane and the absence of the Kle Loeffler bacillus at one and the same time. As before mentioned. this fibrinous deposit may be found on the pharyngeal wall, the tonsils, or tonsillar pillars, though the usual site is the mucosa of the turbinates and septum.

Prognosis: It is here that the disease shows its second peculiarity, in that it proceeds slowly and innocuously, apparently uninfluenced by time or treatment; nor does it ever end fatally, despite the long convalescence, which may vary from three weeks to four months. The lingering and recurrent nature of the disorder finds ample reason to my mind in the merely mechanical blocking of drainage by the membrane, especially if the ostia of the accessory sinuses be partially invaded by the fibrinous plug. With Lake I believe the antra are involved, but I go further and feel sure the other sinuses are similarly affected at times, and thus furnish the means of continuing the infection in the way suggested.

Treatment: Isolation is not necessary other than to prohibit intimate contact between those infected and the healthy. One's convictions on this point are considerably strengthened by St. Clair Thomson's statement that Lack's investigation showed that no case of diphtheria had arisen from contact with one of fibrinous rhinitis, nor had any case of fibrinous rhinitis arisen from contact with one of diphtheria. Chaney, believing the two diseases to be forms of the same infection, is at least consistent in advising isolation, as does Wishart. Posey and Wright were impressed with the local use of a 5 per cent solution of lactic acid. In recommending warm saline irrigation, removal of the membrane, and local use of vaseline to the excoriation at the edge of the nostril, Mohr about sums up the consensus of therapeutic opinion, though Baumgarten departs slightly by insisting on lime water as the form of saline. The exhibition of iron is highly extolled by some, but the form in which it is recommended, that of the tincture of ferric chlorid, is not the one that appeals to me. I prefer for theoretical reasons, perhaps, the syrup of the iodid of iron, especially for the iodin present, so useful in the stimulation of the nasal mucosa. That 2 per cent of all cases of rhinitis in children show a membranous formation has been the experience of Potter, but the statement is deprived of much of its significance and all of its scientific value where bacteriologic standards are used, by his omission of any bacteriological reports. With this introductory remark, however, he goes fully into the treatment, which includes the use of atropin, salicylate of soda, and tamponing the nares, removing the plugs as fast as they become saturated. This procedure seems to loosen the membrane and give relief to the stoppage of nasal respiration. Gluck also recommends atropin. Of course, the effect of the tampons and that of atropin is exactly the opposite, showing the feeling of uncertainty as to the treatment.

Case 1: A poorly nourished child, 4 years of age, of pasty complexion, gave a history of a bad cold lasting over a month, and when examined showed a membrane in one nostril and severe excoriations at its edge. The mucosa was pale, did not bleed on manipulation of the membrane and was bathed in a muco-purulent discharge. The membrane did not suggest in any way a diphtheritic deposit, as it was the color of boiled macaroni, not gray or dirty gray, and much more elastic. Nothing abnormal was seen in the mouth or larynx, nor was there any temperature, glandular swelling, malaise or any subjective symptoms other than the discomfort in nasal breathing, and the burning sensation at the nostril edge. Orders were given to the parents to irrigate his nose every four hours with a warm saline solution, to apply vaselin to the skin lesions, and to give him a tonic. Upon his return in a week's time, it was difficult to see the membrane from the anterior aspect, as it had receded into the middle region of the inferior strait, allowing better nasal respiration, though the discharge was no less. Thus, the lapse of a month, when he was thought cured. However, after an interval of nearly three months, he had a recurrence of the same disorder, which this time yielded more readily. No Klebs-Loeffler bacilli were found.

Case 2: A boy of 5 years, recently convalescent from measles, had been lethargic for some days before I was asked to see him in consultation, and had had a slight nose-bleed two days before. He was thought by the family to have a cold, till the edge of a membrane was observed to rest on the naso-labial margin. The point that disturbed the family most, and naturally excited the apprehension of the family physician, was the persistence of membranous patches on each tonsil. I found a yellowish, pasty membrane completely filling the left nasal chamber, extending back to the pharyngeal wall, from which it depended in a gelatinous curtain, free at the lower border. On each tonsil was an oval, lenticular membrane, and the tonsils were slightly congested, whereas the mucous membrane of the nose was distinctly paler than in health. He complained only of discomfort in nasal respiration and on swallowing, and proved to have no elevation of temperature, no glandular swelling or other constitutional symptoms. His face was paler than usual, so his parents informed me, and there was a distinct infiltration of the cellular tissue under the eyes, and loss of appetite. Nasal irrigation of warm soda solution every four hours, instillation of 25 per cent solution of argyrol in both nostrils twice a day, a throat spray of peroxid of hydrogen, catharsis and the syrup of the iodid of iron internally comprised the therapy employed for the next three days. At the end of twenty-four hours no change was apparent, but three days later he seemed less apathetic, though no other alteration in his condition was observed. A week later the patches on the tonsils were much smaller, the membrane on the pharynx nearly gone and the nose much freer. At this time all treatment was withdrawn save the nasal irrigation and the iron preparation, and in the course of the next ten days he was completely free of all signs and symptoms. Throughout the attack he showed no elevation of temperature, save for a few hours one day, when his temperature was 98.8°. Though repeated cultures were taken, they showed invariably the staphylococcus aureus in pure culture in the nose and a few streptococci in the throat, but never any form of the Klebs-Loeffler bacillus.

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1633 Connecticut Avenue.

Surgical Management of Nasal Accessory Sinus Disease. Lewis A. Coffin, *Med. Rec.*, June 1, 1912.

A number of interesting cases are given. The author states that when the antrum is acutely diseased it tends of itself to recovery. We can accelerate the cure by washing it out a few times, either through the natural opening or through a puncture in either the inferior or middle meatus. Chronic empyema of this cavity may recover from washing, if kept up for a considerable period. A fairly large opening must be made in the inferior meatus through the naso-antral wall, so that the patient can continue this treatment at home. Applications of silver and zinc solutions should also be made to the lining membrane. If the disease has progressed to granulation or has become polypoid a Caldwell-Luc operation should be performed.

Lederman.

THE MONOCHORD.*

DR. MAX A. GOLDSTEIN, ST. LOUIS.

At the International Otological Congress in Budapest I had the pleasure of a personal demonstration of the monochord by its originator, Dr. H. J. L. Struycken, of Breda, Holland. At that time it did not attract the attention which it sincerely merits because of the profusion of instruments and apparatus exhibited at this congress to illustrate every phase of acoustics.

Since then, however, the monochord has been demonstrated on several occasions and before several scientific bodies and has been given a more serious consideration and more liberal practical application, until to-day it is recognized by many continental European otologists as an indispensable part of the apparatus required in making a complete functional test of hearing, particularly where the upper tone-limit of hearing is under consideration.

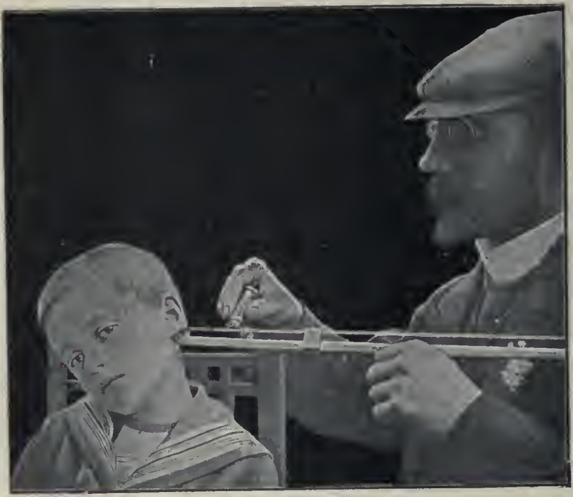

Figure 1: Position of monochord in testing.

The principle of the monochord originally depended on the production of longitudinal waves of sound in the upper tone scale, and the original purpose as defined by Struycken was to substitute the monochord for the Koenig rods, high-pitched tuning-forks and Galton whistles in the perception of air-conduction.

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*Presented at the meeting of the Middle Section of the American Laryngological, Rhinological and Otological Society, St. Louis, February 22. 1913.

The original claims made for the Struycken monochord were later augmented by Prof. Karl L. Schaefer, of Berlin, in that he added to the production of longitudinal sound-waves for determining the upper-tone limit of hearing, a scale of transverse vibrations producing a continuous series of tones from a^1 to the upper tone-limit and thus dispensing with many additional tuning-forks in the development of the Bezold continuous tone-series.

An additional valuable feature, as suggested by Schaefer and Struycken, was the determination of the upper tone-limit for bone-conduction, a phase of functional tests which is not applicable with any other sound-testing apparatus.

Another valuable feature of the monochord is its simplicity and accuracy of record.

In short, the complete functional tests of hearing may be now carried out by using the following apparatus: contra C, C, c^1. c^2 and c^3 tuning-forks and the monochord.

Description:—The monochord consists of a 60 cm. flat, steel bar on which a steel wire with adjustable set-screw is strung to definite tension. The tension of this wire is accurately measured by a simple control device, by means of which a fixed standard of tone may be obtained with each instrument.

A metal sliding-block traverses the steel bar from end to end, is held both to wire and bar by sliding spring-clips, and presents a sharp margin at the front surface of the bar over which it slides, so that the actual tone produced may be read on the combined scale, stamped on the flat surface of the bar.

This scale is indicated in centimeters from 1 to 50, and a second musical scale is recorded from g^7 to c^4.

On the superior surface of the bar the longitudinal vibrations are marked in thousands, in Roman numerals from VI to XXV, giving a longitudinally-vibrating range of tone from 6,000 to 25,000 v. d.

At the proximal end of the monochord is a rounded metallic button by which the apparatus may be pressed to the mastoid or brought in contact with any other bone-surface. The steel wire is attached to this button at one end and to the set-screw at the other. This button is guarded by a hollow sheath to prevent hairs or other disturbing elements from touching the instrument when it is pressed against the mastoid.

The longitudinal tone is evoked by stroking the wire in its longitudinal axis with a metallic rubbing-flask filled with turpentine or benzine, supplied with a felt, automatically-moistened disc.

In moving the sliding-block up or down, thus shortening or lengthening the wire, the longitudinally-vibrating tone is respectively higher or lower.

To determine the upper tone-limit for air-conduction in a given case, the monochord is held with the contact-button near the meatus. The small felt disc of the rubbing-flask is thoroughly saturated with the turpentine or benzine in the container, placed vertically on the chord or wire, and drawn to and fro with slight pressure. If the hearing-perception of the patient for upper tones is fair, we may begin the test at a wire length of 30 cm., (about 8,000 v. d.). When this tone has been definitely heard by the patient, the chord is shortened by pushing the sliding-block up (toward contact-button), and with the gradually decreased length of the chord gradually raising the pitch or tone until a distinct musical sound is no longer audible.

The sliding-block is adjusted ½ cm. at a time, until the actual tone-limit perceived is definitely established. The results may be recorded both in centimeters and in number of vibrations per second. For example, 25 cm. read on the scale of the monochord bar indicates 10,000 v. d; 10 cm. read on the monochord scale indicates 25,000 v. d.

The upper tone-limit for bone-conduction is determined in a similar manner, with the additional feature of pressing the contact-button against the mastoid process. We first register the length of the chord and the number of vibrations constituting the upper tone-limit for air-conduction in the tested ear. The contact-button is then pressed over the mastoid and the patient continues to hear the longitudinally produced tone for ½ to 1 cm. further in the scale; in many pathological cases the perception by bone-conduction is from 5 to 15 cm. more than by air-conduction.

Production of transverse tones:—Schaefer's modification of Struycken's monochord is for the production of tones of transverse vibrations. The great value of this modification is that by making the monochord serve as a test-medium for the upper tone-limit a continuous tone-series from a^1 to the upper tone-limit is obtained.

On every standardized monochord the longitudinal tone of 46 cm. wire length corresponds with the transverse tone of 3½ cm. wire length. Tones of transverse vibration are produced by striking the chord sharply with a light, small, wedge-shaped hammer for all tones between the full wire length and 15 to 20 cm. For all higher transverse tones a short, special violin bow is used, drawing same across the wire.

Tension Controller:—The tension-controller consists of a thin, flat piece of steel definitely weighed, containing at its one end two small hooks or flanges, and at the other end a graduated scale indicating the test weight in kilograms from 10 to 25.

To standardize the wire of the monochord to the proper pitch place the sliding-block on 40 cm., hang the tension-controller from behind with its upper hook over the wire while the lower one engages the monochord from below, tighten the steel chord by means of the tension-screw at the distal end of the monochord bar until the controller is raised to the scale-mark "25." At this point the wire has the proper tension and the standard pitch. To further prove this standard pitch, after testing with the tension-controller, the sliding-bar is placed at 43 cm. on the scale; it must then vibrate in unison with the tone and pitch of the tuning-fork a_1 (435 v. d.) which accompanies the apparatus.

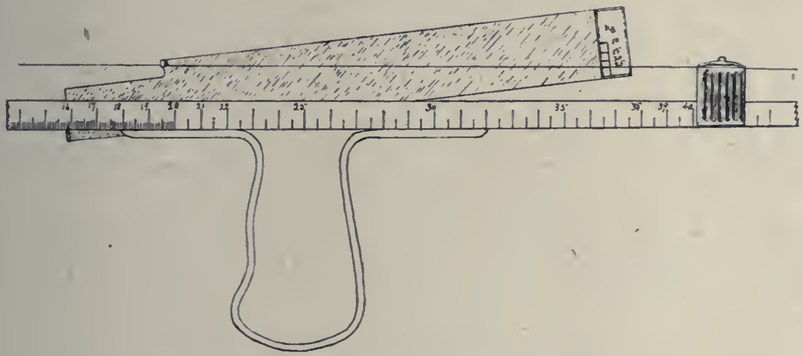


Figure 2: Monochord showing application of tension-controller.

The tone at this chord-length (43 cm.) is 43,500 transverse vibrations and 8,705 longitudinal vibrations.

The Schaefer table of transverse vibrations figured accurately to the scale as read off on the bar of the monochord is herewith presented. The monochord, therefore, presents a range for transversely vibrating tones of from 387 to 6,200 v. d.

It is difficult to introduce an innovation in so stereotyped a system of examination as that of functional test of hearing; this is

Prof. K. L. Schaefer's Table for Estimation of Transverse Tones.

	C	C#	D	D#	E	F	F#	G	G#	A	A#	B
					Octave of C^1							
								387,54	410,59	435,00	460,87	488,27
								48,3	45,6	43,0	40,6	38,3
					Octave of C^2							
Number of vibrations	517,31	548,07	580,66	615,18	651,76	690,52	731,58	775,08	821,17	870,00	921,73	976,54
Length of wire	36,2	34,1	32,2	30,4	28,7	27,1	25,6	24,1	22,8	21,5	20,3	19,1
					Octave of C^3							
Number of vibrations	1034,61	1096,13	1161,31	1230,37	1303,53	1381,04	1463,16	1550,16	1642,34	1740,00	1843,47	1953,08
Length of wire	18,1	17,1	16,1	15,2	14,3	13,5	12,8	12,1	11,4	10,7	10,1	9,6
					Octave of C^4							
Number of vibrations	2069,22	2192,26	2322,62	2460,73	2607,05	2762,08	2926,32	3100,33	3284,68	3480,00	3686,93	3906,17
Length of wire	9,0	8,5	8,0	7,6	7,2	6,8	6,4	6,0	5,7	4	5,1	4,8
					Octave of C^5							
Number of vibrations	4138,44	4384,53	4645,24	4921,46	5214,11	5524,16	5852,64	6200,66				
Length of wire	4,5	4,3	4,0	3,8	3,6	3,4	3,2	3,0				

practically shown in the case of the monochord, for it is now over four years since Struycken first demonstrated this monochord. This reticence on the part of the profession is not due to the lack of the possibilities and practicability of the monochord as an accessory hearing-test apparatus, but to a conservatism that holds tenaciously to older and well-established methods. With our American otologists it is also partly due to the fact that many of them have been unable to assimilate the description of the monochord as originally published in Dutch and German.

Several of my personal friends among our confreres have had the monochord in their possession for months but have not used it because of insufficient stimulation or lack of sufficiently detailed direction for its application. This has induced me to present the monochord for practical consideration. It is easy of application, accurate and scientific in results, and develops phases of functional hearing-tests which have not been possible by any other means until now.

3858 Westminster Place.

Remarkable Case of Foreign Body in the Larynx. A. ROOZENDAAL, *Ned. Tijdschr. v. Geneesk.*, April 20, 1912.

While watching in a forge a man of 21 years suddenly felt something strike his throat; immediate cough with slight hemorrhage. Also a small wound on neck noticed ½ cm. above the pomum Adami. Slight inflammation of the laryngeal mucosa; close examination revealed a black spot in the posterior wall. A cotton applicator dipped in cocain was applied around this spot. Upon its removal a splinter of iron with sharp edges was found attached to it. Cough immediately disappeared. By raising the epiglottis the small entrance portal of the foreign body was located just beneath the tuberculum epiglottidis. Rapid recovery. The author could find no similar case reported. ED.

MOUTH GAG WITH A PERMANENTLY ATTACHED TUBE FOR CONTINUOUS ETHERIZATION, AND A NEW TONSIL GRASP.

DR. W. C. WOOD, PHILADELPHIA.

Mouth-gag with an attached tube for continuous etherization:— This instrument (Figure 1) is a Stubbs' modification of Murdoch's mouth-gag with a tube attached for the conveyance of ether vapor from the continuous etherization apparatus. I was prompted to combine the two instruments in one for the following reasons: 1. The metal tube commonly used with the apparatus is one additional instrument to occupy space at the lip margin. 2. It is one additional instrument to be sterilized at each operation, an item to be considered when several cases are to be operated in succession. 3. The tube ordinarily used is too large and emits too much vapor. 4. During the operation it is continually being hooked out of the mouth by sponges, etc., and dropped upon the floor, thus necessitating a re-sterilizing before it is replaced.

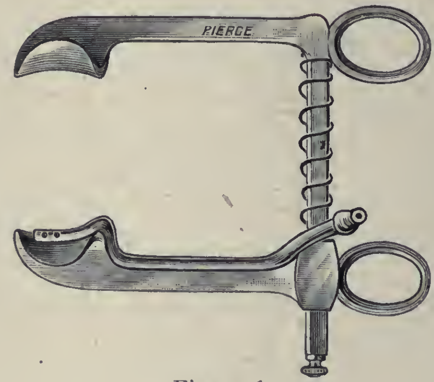


Figure 1.

The instrument I have devised does away with all these objections and has proved perfectly satisfactory both to me and to several who have used it at my request. There are those who prefer some gag other than the Murdoch, but there is no reason why this idea cannot be carried out on the gag they prefer.

The outside diameter of the tube is a little less than one-quarter inch, made of thin, strong tubing, giving a sufficiently large inside diameter for the flow of the vapor. It is permanently attached to the upper arm of the gag, and curves downward and backward, away from the mouth, for the attachment of the rubber hose of the ether apparatus. It follows the upper arm of the gag, curving along the edge of the broad extremity; thus avoiding contact with the teeth. The ether escapes through a hole in the end of the tube and is directed toward the uvula and posterior pharyngeal wall. While I usually resort to the dissection and snare method, I have used this combined gag and ether tube when removing tonsils by the method described by Sluder, and found it perfectly satisfactory, interfering in no way with the manipulation of the guillotine.

Tonsil grasping-forcep (Figure 2): It appears almost ridiculous to offer a new instrument for grasping tonsils when one considers the large number of instruments already in use for this particular step in a tonsillectomy. Nevertheless, I have found with all the grasping forceps I have used or seen used, one of the following two objections:

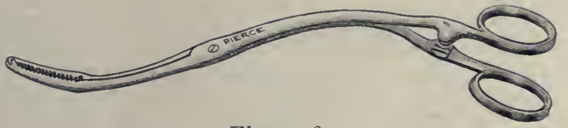


Figure 2.

1. In a large majority of the tonsil-forceps, when the instrument is locked there is metal against metal at the grasping end. In other words, instead of simply taking hold of the tonsil, the tissue is compressed and crushed between two metal surfaces, and is constantly tearing loose, removing at the same time a small section of tonsil. This causes bleeding, renders a second grasp on the tonsil difficult, and results in a loss of time.

2. The instruments to which the above objection does not apply are usually of such a size that they can only be readily used on the larger, exposed tonsils. In the smaller tonsils, imbedded or almost entirely covered by the pillars, these larger instruments are useless, unless a smaller instrument is first used to draw the tonsil out. This adds another instrument to the list and means an unnecessary waste of time.

I have, therefore, attempted to devise a tonsil-grasp which will, to a certain extent at least, overcome these objections, and at the same time be applicable to tonsils of all sizes and characters. This instrument is so constructed that when it is locked there is still a space of about one-sixteenth of an inch in and about the teeth. Thus while the teeth overlap, they never come in contact. *At no point does metal touch metal.* For about three-quarters of an inch back of the teeth the jaws are separated about three-sixteenths of an inch, giving space for quite a little tonsillar tissue. Hence, while the tonsil is grasped in two ways by this instrument, namely, by the biting of the teeth themselves, and by the tonsil contained in the space between the jaws back of the teeth, yet at no point is the tonsil crushed. The handles are of such a size that the snare-loop will pass over them. They are curved back to a slight degree in order to give more room for the hand of the operator when dissecting.

Both of the instruments I have described were made for me by The Harvey Pierce Company, 1629 Chestnut street, Philadelphia.

Jefferson and Gratz Streets.

Papilloma of the Vocal Cords Cured by Radium. Robert Abbe, *Med. Rec.*, April 13, 1912.

Two very interesting cases are reported. One of the patients, a woman, had to have her larynx cleaned every six months for over forty-seven years. A large part of the growths rapidly disappeared under radium applications and for three years no surgical treatment was necessary.

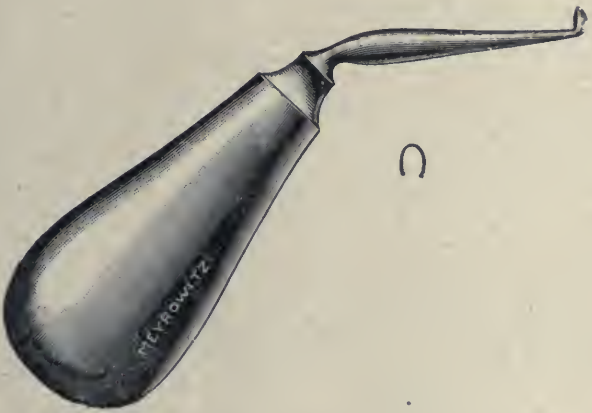
In another instance where the growth was localized on the left vocal cord and where two attempts at its removal were made with recurrence of the greater area, a tracheotomy was performed and a small capsule containing 100 mg. of pure radium was introduced through the wound and was suspended between the vocal cords for thirty minutes. No further treatment was given. Three months later no track of the growth could be seen.

Two other cases are mentioned as being under treatment at the time, with a promise of ultimate cure. Lederman.

CURETTE FOR BRIDGE IN RADICAL MASTOID.

DR. MARK D. STEVENSON, AKRON, OHIO.

The difficulties and dangers in removing the outer bony walls of the attic and aditus ad antrum are appreciated by all otologic surgeons. The chisel must be used with extreme care and delicacy in order to avoid injuring the important structures to the inner side of these narrow cavities, viz., the facial nerve and external semicircular canals. Not only may these structures be injured directly by chisels, but pieces of bone may be impacted against them. If a loose piece of bone is encountered, it is preferable that it should be broken outward by a curette rather than inward by a chisel. The handle is so short that jumping of the curette may be easily guarded against and yet considerable force may be applied. Some operators claim that the blows of the chisel so close to the labyrinth may injure, to a greater or less degree, the delicate labyrinthine contents. For the same reason in breaking down the bony bridge, ordinary curettes are either very dangerous or inefficient, the cutting edge being turned in such a way that the important structures mentioned may be injured.



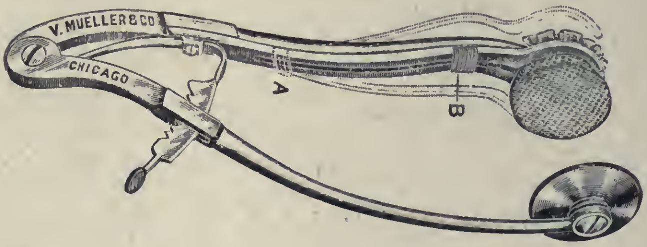
After the antrum has been opened and only a small bridge of bone external to the aditus is left to remove, the curette illustrated may be easily and safely introduced into the middle-ear cavity, the handle being in the external auditory canal, and the bridge of bone quickly removed. It not only serves to remove the external bony wall of the attic but can be used to remove, from either end, the external and part of the upper wall of the aditus ad antrum. The curette is of such size that it can be readily passed into these cavities and unlike other curettes its cutting edge is turned away from the structures on the inner wall of the attic and inner and lower walls of the aditus ad antrum. Its use results in easy, speedy and safe removal of the bony bridge.

165 East Market Street.

CORWIN'S TONSIL HEMOSTAT.*

DR. A. M. CORWIN, CHICAGO.

Spring clamps with sliding cuff hold the gauze pad, which can be made of any size desired. The instrument may be used singly or in pairs and is interchangeable. It is simple and strong in construction, and fits the parts perfectly. It is quickly adjusted and easy to apply or remove.



Used in routine fashion in tonsillectomy under general anesthetic it gives a comparatively bloodless pharynx during operation. very much shortening the time involved, and reducing the total amount of blood lost to a minimum, especially if a solution of tincture of iron in glycerin or other styptic be applied to the pad. In case of delayed or secondary hemorrhage the instrument is invaluable.

15 East Washington Street.

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*Manufactured by V. Mueller & Co.

EDITORIAL DEPARTMENT

DEFECTS OF SPEECH.

EDITED BY
DR. G. HUDSON-MAKUEN,
PHILADELPHIA.

Stammering—(Dyslalia).

Stammering is not a distinct entity, but it varies in character quite as much as any other nervous affection. The phenomena of stammering are also varied and variable, so that not only are no two stammerers exactly alike, but no stammerer continues to stammer in exactly the same way. Moreover, stammering is an acquired and developmental affection just as all forms of speech are acquired and developmental, but heredity is often, and I may say usually, a factor in the acquirement or development of stammering, in the sense that tendencies to stammer are transmitted from parent to offspring. These tendencies appear as the result of an inherited weakness of the nervous mechanisms of speech, rendering them unequal to the demands made upon them during the mental and emotional stress of the developmental speech-period.

It must be apparent, therefore, that the causes usually given for stammering, such as fright, injury, and the like, are not the chief causes at all, but they are largely accidental or incidental to the affection, and of comparatively little practical or scientific importance. I emphasize this fact because only the other day I received a letter from a well-known author who adds another to the many interesting theories which have been advanced with reference to the causation and treatment of stammering. I quote from the letter:

"My dear Dr. Makuen: I am engaged in writing a series of essays, and among other subjects which I intend discussing is 'The Mental Side of Stammering.' Recently I came across your excellent article in the December, 1909, issue of the *Medical Record*, in which you so clearly appreciate the important role played by emotional states in the causation and continuance of stammering, and I am now writing in the hope that through a citation of some of your cases I may be able to verify a theory to which I am strongly inclined.

"This is the theory, namely, that in a large proportion, if not the majority, of cases of stammering, the difficulty in affecting a cure is due to the fact that the stammering has as its primary cause the forgotten reminiscence of some profound emotional shock of early childhood—fright, grief, infantile sexual disturbance, or whatever it may be—which needs to be discovered and recalled to memory before a lasting cure can be had. In other words, I am inclined to regard stammering as a psycho-neurosis, originating like all other psycho-neurotic symptoms in the subconscious influence of what Dr. Freud calls complexes. Now, in recalling your cases, in looking back over their early history so far as you have been able to ascertain it, do you or do you not feel inclined to agree with me? And if you do, would you not be so kind as to send me a statement outlining the history of three or four cases that would be very much to the point in this connection?

"Personally, I am greatly impressed with the fact that stammering seldom, if ever, develops until *after* a child has learned to talk. Freud, and I think Janet and Sidis also, have shown that it is at the ages of 3 to 7 that emotional disturbances are most likely to have lasting effects on the mind and the nervous system of the child; and I suspect that in this fact we have the clue to the seeming paradox that a child, once knowing how to speak correctly, should suddenly develop a stammer. Of course, the factor of imitation has to be reckoned with; but personally I find myself wondering just why certain children should imitate stammerers when others, exposed to precisely the same environment and having the same heredity, do not. Can it be that their suggestibility has been increased by some psychic accident, so that they seize upon stammering as a handy symbol, so to speak, of the internal conflict, just as other juvenile hysterics seize upon convulsive movements, contractures, tics, or whatever may be the symptoms they happen to develop?

"Of course, I realize that in our present state of knowledge—or rather lack of knowledge—regarding the first years of most stammerers, it will be a difficult matter to substantiate this thesis. But I have already assembled a number of cases that seem to bear it out, and I am hopeful that I shall be able to add a few from your experience.

"Trusting, then, to hear from you within a few days, believe me, etc."

My reply was as follows:

"My dear Sir: I have not answered your letter sooner because I have been busy with other pressing duties, but it gives me pleasure now to reply to some of the questions which you bring up in relation to stammering.

"I have found that no two stammerers are alike, but they differ among themselves as do normal people, and therefore no one method or system of treatment can be applicable to all cases.

"Moreover, children begin to stammer not after they have learned 'to speak correctly,' but *while* they are learning to speak, the developmental speech-period continuing up to 8, 10, or even 12 years of age. Stammering, therefore, must be regarded as a developmental neurosis, if I may use that expression, and if it continues long enough it may become as you say a psycho-neurosis.

"It is true that of children in the same family some may acquire the affection and others may not, although subjected to the same environment, just as some children in a family will acquire any other affection or disease while others will escape. I think I should hardly say that children of the same parentage have the same inheritance. For instance, a certain number of the children of deaf-mute parentage will be congenitally deaf, while a certain other number, and the majority perhaps may have normal hearing-power.

"Children inherit that indefinite and intangible something which we call 'tendencies.' The tendency to stammer consists in some weakness of the speech-mechanisms, which interferes with the normal development of speech, and few if any such children, I think, would ever acquire the habit of stammering if they could have the right kind of help while they are learning to speak.

"The emotional element in the majority of instances is not altogether a cause but it often follows as a result of the child's difficulties in acquiring normal speech. Any little accident that may cause hesitancy of speech in a sensitive child arouses, of course, a fear of future similar experience, and unless the child is carefully managed from that instant, the very complex mental and physical habit of stammering is liable to develop and become estabished. When the habit has once become established, however, I am convinced that nothing short of a complete re-education of the speech-centers can possibly cure the affection, but if the treatment is taken up at the very inception, only a little help is required to prevent its development.

"I am of the opinion that it is not so much or so often a 'forgotten reminiscence' as it is the *consciousness of not being able to speak without hesitation* that interferes more than anything else with our success in this work.

"I do not say that your theory as to the causation of stammering may not hold good in a certain number of cases, but in all my experience, including a careful study of three or four thousand stammerers, I have had nothing to warrant me in the belief that the recall of an unfortunate, forgotten reminiscence would have any remedial effect upon stammerers, except possibly as a preventive measure for those in the very first stages of the affection. The fact is, I think, that if you could eliminate from the stammerers psychic cosmos every possible imperfection, he would still have the habit of stammering to overcome, because the real stammerer knows no more how to speak freely and smoothly than does the average untaught person know how to play the violin. The cerebral speech-centers must learn to manipulate the peripheral centers in the proper manner just as a would-be violinist must learn to manipulate his instrument before he can play upon it.

"It is something like the speech of a cleft-palate individual. When he has once acquired the peculiar cleft-palate speech, you may give him a perfect palate but it of itself will not improve to any great extent his speech.

"It is true that stammerers may speak fairly well under certain psychic conditions, but that with them is purely accidental and they do not know how or why they do it.

"I shall be glad to see whatever you have written, or may write, and I shall send you under separate cover some reprints of my earlier articles on this subject.

"Very sincerely yours,"

This correspondence raises the question as to what extent stammering should be regarded as of psychic origin and to what extent it is due to physical conditions. That many stammerers are profoundly neurotic must be admitted by all who have had much experience in this work, and that their nervous condition has much to do with their difficulties of speech must also be recognized; but the question is as to what extent their neurotic condition is the cause of the stammering and its continuance, and to what extent it is the result of the affection. That it is more largely resultant than causative, at least in the chronic cases, is a conclusion that I have reached after a careful study of this subject, and the only way to rid the stammerer of his nervousness is to prove to him that he can overcome his stammering. The treatment of the affection, therefore, must be approached through the physical rather than through the psychical condition of the patient, because the one dominating and overpowering idea—and it almost amounts to an obsession—is that of his inability to conquer his defect. To such an extent is this true that many of them cannot be approached through any other avenue than that of the speech, and in some cases even the hypnotic state cannot be induced.

The purely psychic treatment of stammering has been a failure so far as I have been able to determine, and I have never known a case of chronic stammering to have been cured or very much helped by it when it has not been accompanied by a considerable amount of physical training.

Treatment of Esophageal Stenosis with Electrolysis. JENCKEL, *Klin. therap. Wchnschr.*, No. 34, 1912.

From experience with several cases, Jenckel concludes that in the presence of impermeable cicatricial stricture of the esophagus, electrolysis should be used at first before a plastic operation is undertaken.

ED.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

(Regular Meeting, November 27, 1912.)

JOHN F. MCCOY, CHAIRMAN.

Case of Specific Glossitis. By DR. WOLFF FREUDENTHAL.

The patient, a man 60 years of age, had been troubled with his tongue for about twenty-two years. There was no pain but the tongue felt uncomfortable. He had been treated by various physicians, and last year had been treated with salvarsan in another city. The injection removed the lesions of the skin which cleared up well, but had absolutely no effect on the tongue. When he first came under Dr. Freudenthal's observation, a malignant neoplasm was suspected, but after a careful investigation it seemed evident that it was a late form of specific lesion. There were a few gummatous infiltrations, with ulcerations and a warty growth. Zinnser's excellent atlas contains pictures of very interesting specific infections of the tongue, but they do not come up to the one presented in the case shown. Probably after one or two more injections of salvarsan the tongue may clear up.

DISCUSSION.

DR. HERZIG said that two years ago he saw a case of gumma of the tongue which had been previously diagnosed as carcinoma linguae. After all antispecific treatments without result, salvarsan was injected intra-muscularly. No effect was noticed. Then at the suggestion of an other consultant calomelol inunctions were tried and successfully resulted in a complete cure as far as disappearance of the gumma was concerned.

DR. W. W. CARTER asked if Dr. Freudenthal could in any way distinguish between apthous stomatitis and specific glossitis by objective signs.

DR. GLEITMANN said that we have the Wassermann reaction test.

DR HELLER told of a patient whom he had seen three years ago, who came to him with a sore mouth. A diagnosis of stomatitis was made and with the application of silver stick cauterization and a simple mouthwash the condition cleared up in a week. Six or seven months later he returned with a similar condition, and the same treatment was applied, but this time it did not clear up. He returned some time later with a big ulceration on one tonsil, a true specific ulcer. In the beginning of this attack the appearance was identical with the previous one. This shows that simple and specific stomatitis may be easily mistaken for each other.

DR. FREUDENTHAL said that there was here a distinct gummatous ulceration, and a leucoplakia which is often combined with syphilis. These do not usually last so long as in this instance. The man has had this condition for twenty-two years, and possibly had been treated with iodids and mercury repeatedly.

Replying to Dr. Herzig's suggestion, Dr. Freudenthal said that if the patient was not improved by one injection he would have more, as many as three if necessary. The skin condition was certainly syphilitic.

Two Cases of Stab Wounds of the Larynx. By DR. ANTONIE P. VOISLAWSKY.

Case 1: T. W., male, age 44. On April 27, 1910, the patient was brought to the New Rochelle Hospital with an incised wound about six inches long, extending across the anterior surface of the neck about an inch from the clavicles. The incision was sutured with continuous chromic gut suture. This was removed, the wound was explored, and the cricoid cartilage was found to be cut into two pieces; the incision was freed, incised in longitudinal manner, and brought together by three chromic gut sutures. Both sterno-mastoid muscles were partly divided by original incision. Continuous sutures of chromic gut were made on each side of the trachea to bring the deep cervical fascia and muscles together. The skin incision was brought together on each side of the tube with continuous silk sutures. The patient was put to bed in a weak condition.

Temperature gradually subsided from 101° to normal, and he was discharged at the end of eighteen days. At present he suffers no inconvenience except hoarseness. There is an atresia in the larynx on the anterior wall, extending about one-quarter the distance of the lumen, and the right cord is injured anteriorly. The appearance is as though a section one-quarter of an inch in length and one-eighth of an inch in thickness had been punched out.

Case 2: W. M., male, age 45. On July 27, 1912, the patient was brought to Smith Infirmary in an ambulance, his throat having been cut with a broken bottle. The left ala of the thyroid was badly lacerated and hanging loose; removed by the surgeon. The vocal cords and inside of the larynx were exposed. The wound was sewed up.

Present condition, four months after the injury: External wound still discharging, showing signs of a fistula to the mucous structures beneath; probe can be passed into the larynx above the cords. Internally, there is a prolapse of the muscles—the stylo-pharyngeus, inferior constrictor, sterno-thyroid and sterno-hyoid—or, what is more likely, a buckling of the cut and lacerated ends of the muscles. The patient has gained in weight but is unable to exert himself to any extent without resting to get his breath. His voice is a harsh whisper.

DISCUSSION.

DR. FREUDENTHAL said that the cases were too interesting to be allowed to pass without some discussion. Dr. Voislawsky had asked for suggestions as to relief. It might be well to cut away the granulations with a double curette. The man would then be able to speak, anyway.

DR. VOISLAWSKY replied that it has been cauterized several times, but was still no better.

Dr. Quinlan asked if a tracheotomy had been done to which Dr. Voislawsky replied in the negative. The wound had been made with a broken bottle, and the thyroid cartilage simply hung there. The first man who saw it removed a piece of the thyroid cartilage, so that there was a resultant prolapse and the fistula—the prolapse of the muscle tissue, or the torn ends of the muscle turned in and covered with granulations, and the fistula. Not having any frame-work to use in the repair, he would like some advice as to how to proceed to close up the fistula and give the man a decent breathing space.

Dr. Quinlan said that at St. Vincent's in all cases of attempted suicide or trauma of the throat they do a tracheotomy at once, in order to put the laryngeal parts at rest, and give the injured conditions more careful attention. There is great danger of septic pneumonia; and if there is any need for surgical interference, it can be done much better. It is always best to do a preliminary tracheotomy in these cases, as many bad conditions are overcome by taking off the work of the upper respiratory muscles.

Right-sided Vocal Paralysis: X-ray Plate Showing Probable Aneurysm: Autopsy Revealing Carcinoma. By Dr. J. H. Guntzer.

The patient was a man 61 years of age, a drug salesman. He came to Dr. MacKenty's clinic on August 13 complaining of dysphagia. Wassermann was negative. Examination revealed a paralysis of the right vocal cord. He stated that he could not swallow solid food at all, and at times not even fluids. Bougies showed esophageal obstruction. He was kept under observation for a few weeks, and X-ray plates were made. Dr. Law, the Radiographer at the Manhattan Eye, Ear and Throat Hospital, thought that it was probably a beginning aneurysm of the aorta, but since the autopsy finding, concluded that the bulging showing in the plate was probably the descending aorta.

The patient was admitted to the German Hospital, Brooklyn, in the medical service on September 22, 1912, and on October 8, was transferred to the surgical service. On October 10 a gastrostomy was performed. He developed pulmonary edema and died October 12. Through the kindness of Dr. H. W. Jaeger, the House Physician, I received the following report: Autopsy revealed a carcinoma extending anteriorly and to right of esophagus about and around it, 20 cm. from superior end and almost ready to slough into the trachea. The stomach had undergone a marked atrophy, and the obstruction of the esophagus at the point above mentioned was complete.

DISCUSSION.

Dr. Quinlan asked if the carcinoma was entirely in the right side of the larynx.

Dr. Herzig replied that it was in front of the esophagus and involved the trachea.

Dr. Quinlan then said that many of the apparently laryngeal carcinomas are really esophageal carcinomas, and asked whether the dysphagia or the dysphonia was noticed first. This was a point of great importance. In his service at the City Hospital many years ago, there were a number of cases in which the beginning of these so-called laryngeal carcinomata were proved to be not laryngeal but esophageal. They start from the esophagus, and encroach upon the larynx, and then we find this condition. It is only on the autopsy table the extension from the anterior wall is found; and so the first symptoms must be carefully noted—whether it is dysphonia, dysphagia, or dyspnea.

Dr. Gleitsmann said that Dr. Van Wagenen had spoken to him of the case before presenting it to the Section, and had told him that formerly the cord was paralyzed, while now it showed slight movements toward the median line, resulting from the recuperation of the adductor muscles, due to the lessened pressure in consequence of the improvement of the aneurysm.

Dr. Quinlan said that aneurysm with phthisis was a rather rare condition; aneurysms with malignancies are more frequent, so that this was a case of unusual exception, if it was phthisis. The transfixion might be due to some tubercular glands causing pressure or some interference with the mechanism of respiration.

Dr. Van Wagenen said that the reason he had had the case fluoroscoped was to exclude entirely any tuberculous gland that might be undergoing resolution. There was a strong history of tuberculosis, and the great improvement in the motion of the left vocal cord from simple rest in bed led him to think that there might be a resolution of some tuberculous glands which were pressing on the nerve on that side, causing the paralysis. In fluoroscoping the case the patient was turned in almost every conceivable angle, and a very beautiful picture was obtained, but there was not a single gland or anything of that kind to be seen. Since admission the condition of the lungs had improved. The man had taken iodids for two years off an on in the various institutions where he had been treated. Since the present method of treatment, during which he has been kept in bed with no other than local treatment for the nasal discharge, there has been improvement in the condition of the cord and of the aneurysm. Some of the pressure has been taken off the recurrent nerve, by a reduction in the actual bulk of the aneurysm, with an early return of adduction, the stronger motor influence, due to a relaxation of the strain on the outer bundle.

Immobility of Left Side of Larynx Accompanying Cyst of the Thyroid Gland. By Dr. Duncan MacPherson.

Case 1: The patient came to Dr. Smith's clinic at the Manhattan Hospital last August. Examination revealed a large cyst pressing against the larynx and markedly displacing it, so much so that the anterior part of the thyroid cartilage pointed over to the right angle of the lower jaw. It was not more than an eighth of an inch from the angle. The history dated back nine years, when the patient first noted the growth. She came to the hospital complaining of breaks in her voice for the last three weeks. The cyst was injected with iodin three times by Dr. White, but with no special result. It was then decided to remove the cyst. The growth was found to extend from below the clavicle as high as the hyoid bone. There was absolute immobility of that side of the larynx, apparently due either to pressure which prevented that side from moving, or to a paralysis of the nerve. After removing the growth the larynx regained its natural position, and is now in the median line, but that side of the larynx failed to move until to-night, when for the first time a slight movement was noted approximating to the opposite side. One interesting feature of the case was the extreme displacement without any disturbance of phonation until three weeks previous to operation; another was the absence of discomfort excepting a slight inability to phonate clearly for the three weeks prior to the removal of the growth; still another is that the nerve is now resuming its function and the cord will probably soon be all right.

Case 2: Dr. MacPherson said that the second case was an aneurysm of the arch of the aorta, and that he would only mention a few of the most interesting features. The patient had applied to him two and a half years ago, stating that while playing golf, three days before, he had suddenly found himself unable to phonate. He tried to call to some one in front of him and could not. He waited for two or three days, and then came to Dr. Macpherson. Examination showed that the left cord was not functionating at all. The rapid onset did not seem to indicate aneurysm, but owing to uncertainty the patient was sent to Dr. Smith who saw him in conjunction with Dr. Jonathan Wright and Dr. Harlan Brooks. There was a difference of opinion as to the diagnosis, but the consensus of opinion was that it was probably an aneurysm. The man had been perfectly healthy prior to this trouble. He was a carpenter by trade and able to do heavy work. There was a difference of opinion as to his pulse; the tension was the same on both sides. He had no pain; no shortness of breath; no cough; no change in the pupils on either side; no tracheal tug. There was some enlargement of the heart.

The man went along for a month or two with difficulty in his phonation, but this has been improving, and he now phonates normally for ordinary conversation. The X-ray plate showed the aneurysm, which proved to be very large. But for the plates it would have probably been impossible to arrive at a conclusion as to the cause of the paralysis. The plate was taken a month after the onset. The man can now phonate as well as ever for ordinary conversation, but the cord is immovable and in the cadaveric position. It is also interesting to note that although seen so soon after the first subjective symptom made its appearance the adductors and adductors were equally involved, although it is possible that the adductors were involved previous to the loss of the power to phonate. The patient, however, was a foreman, was obliged to give directions to his men in a loud voice, and would probably have noticed any marked defect.

DISCUSSION.

Dr. Smith said that it had been stated by some authority whom he could not at the time recall that there was involvement of the recurrent laryngeal nerve in something over eighty per cent of goiter. After having seen this statement he investigated the matter in all cases of goiter coming under his observation and had observed involvement in but two of the ten or twelve cases. He also called the attention of his assistants to this statement, and requested that they take special notice in regard to the matter and report to him upon it. Up to the present moment there have been only three cases noted in his clinic, including the two he had seen himself.

Referring to the case of aneurysm of the arch, he had felt that there was an element of doubt as to the existence of such an extensive aneurysm with apparently such small constitutional evidence, and upon this belief had suggested the possibility of its being a mediastinal tumor instead of an aneurysm. He thought he had observed a distinct enfeeblement of the left pulse as compared to the right, which evidence was not borne out by the other consultants. He also felt that there was tracheal tugging, upon which there seemed to be a difference of opinion. The immense shadow shown by the radiograph with a predominance to the left side would naturally lead one to suspect aneurysm, particularly as there was no history obtainable of a syphilitic nature and there was no cachexia which would indicate sarcoma.

Recurrent laryngeal paralysis is the result of either a central lesion, involvement of the nerve trunk itself, or peripheral pressure. If of a central character the paralysis of the larynx is always associated with an additional paralysis of the facial, pharyngeal and superior laryngeal nerves. This invoves both sensory and muscular paralysis. In peripheral involvement, if due to aneurysm of the arch one would expect some disturbance of the esophagus, stomach and heart, as the recurrent laryngeal nerve gives off branches to each of these organs, after winding around the arch of the aorta. With paralysis of the right side of the larynx one is less liable to suspect aneurysm and should direct his attention more particularly to some specific or malignant disease, as aneurysm of the subclavian is unusual.

Dr. Smith believed that the recurrence of voice production in Dr. MacPherson's case was not a re-instatement of the recurrent laryngeal, but an effort on the part of nature to substitute the false cord in the production of sound for the paralysis of the true one. He did not believe that the pressure from the aneurysm was lessening or that the nerve would regain its power.

Dr. McCoy asked if Dr. Macpherson had seen the operation for the removal of the cyst of the thyroid, and if so, what operation was practiced. Possibly the percentage to which Dr. Smith had referred might have a bearing on the percentage of cases wounded at the operation, rather than the effect of the tumor itself on the laryngeal nerve, for the cases were few and far between where the tumor produces any effect on the laryngeal nerve.

Dr. MacPherson, replying to Dr. McCoy, said that the operation performed was a simple enucleation, not at all difficult, and that the cyst came out very easily without any danger of interference with the nerve.

In regard to the authority quoted, he thought that the statement had come from some one who was associated with Dr. Mayo's clinic in Rochester, where, probably, a different class of cases is met, cases of very large goiter. Certainly the cases that had come under his own observation did not bear out that statement.

(To be Continued).

BOOK REVIEWS.

Diseases of the Throat, Nose and Ear, for Practitioners and Students. By Dr. W. G. Porter, M. B., B. Sc., F. R. C. S. Ed. Pp. 275, with 77 illustrations, 44 in colors. John Wright and Sons, Bristol, 1912. Price, 7/6 net.

This is a compend of diseases of the ear, nose, and throat for the general practitioner and oto-laryngological student.

The author places the greatest emphasis on the methods of diagnosis and presents his subject-matter in lucid and terse style.

Forty-four colored illustrations and seventy-seven in black and white elucidate the text in a practical and effective manner.

Das Asthma (Asthma). By Dr. Wolfgang Siegel, Bad Reichenhall. Pp. 164. Verlag, Gustav Fischer, Jena, 1912. Price, M. 4.

Siegel, in his clinical observations and experiences at Bad Reichenhall, regards bronchial asthma as a reflex neurosis of which the asthmatic attack is the most important feature. He concludes that the origin of such asthma is to be found either in an acquired or hereditary neuropathic predisposition or an arthritic diasthesis. He presents a graphic picture of the clinical symptoms of asthma and offers a very elaborate therapy.

But little stress is laid on nasal obstructions and their treatment in the disposition of asthmatic cases, yet Siegel cites several instances where adenoid and other nasal and naso-pharyngeal irritations have produced reflex symptoms of asthmatic character.

This little monogram bears the stamp of individuality, but in many instances does not substantiate our present theories.

Recherches sur l'histoire de l'anatomie et de la physiologie des fosses nasales depuis Hippocrate jusqu'a la periode specialistique. By Dr. C. Chauveau, Paris. Pp. 55. J.-B. Bailliere et Fils, Paris, 1912.

The eminent authority of the classic history of the anatomy and physiology of the nose and pharynx presents in this history of the nasal fossae a further contribution along the lines of his previous writings.

The author traces, step by step, the historic period in this field, preceding Hippocrates, the discovery of the olfactory nerve, and the earliest description by Rhazes (850-930) of the ethmoid cells.

Much attention is given in this monograph to the evolution of this field in recent times.

The sense of smell from the physiological point of view and its first consideration by Schneider early in the seventeenth century is mentioned.

There are still numerous connecting links in this historical monograph which have not been developed by the author, but the splendid efforts made by Chauveau have certainly paved the way to a possible realization of a complete history of this field in rhinology.

Die Ohrenkrankheiten im Kindessalter. (Otology in Childhood). By Dr. Gustav Alexander, Vienna. Pp. 886, with 9 plates and 127 illustrations in the text. Reprinted from the "Handbuch der Kinderheilkunde," Band 6. Verlag F. C. W. Vogel, Leipzig, 1912. Price, M. 20.

There is no greater evidence of the giant strides made in otology in the past decade than to find that it stimulates this most eminent authority and observer to present to the otological world a volume of 886 pages devoted exclusively to a consideration of diseases of the ears occurring during childhood.

Every feature of disease of the ear in childhood and its variation from that in the adult forms the subject-matter for important chapters in this masterly volume. The anatomical development of the entire organ of hearing; variations in the method of examining the ears of children; the relations of the exanthemata to rapid involvement of the middle ear; the unusual features of otitis in sucklings; the question of deaf-mutism, its heredity, influence and eugenic considerations; the inflammatory conditions of the labyrinth and their symptoms and peculiar diagnoses; extra- and intra-cranial otogenic diseases in childhood; the different varieties of meningites; abscesses of the brain and lumbar puncture; traumatic injuries; endemic cretinism; and the concluding chapter on hearing defects in their bearing on the education of the child, the examination of school-children, and all the precautions to be taken for the detection of even slight defects but briefly suggests the enormous amount of subject-matter which Alexander has so exhaustively included in this, the greatest volume which has as yet appeared in such a thoroughly special treatise in otology.

The volume is a masterpiece of otological literature, a monument of enormous clinical research and observation, and an evidence of unusual scientific individuality.

Pathologia, anatomia e fisiologia della tonsilla faringea. (Anatomical and Physiological Pathology of the Pharyngeal Tonsil). By Dr. Francesco Maltese, Turin. Pp. 261 with 6 plates and 20 illustrations. Pavesio, Turin, 1911.

Following a brief historical introduction the author reviews the anatomy, embryology and topography of the pharyngeal tonsil. He discusses the numerous theories which refer to the physiological aspects of this widely discussed lymphoid tissue, and accepts the hypothesis that Wadeyer's lymphatic ring is a natural guard against invasion of infectious micro-organisms that find their way into the system through the respiratory tract.

In the section on the pathology of adenoiditis, acute inflammatory processes, phlegmonous, herpetic, chronic and primary diphtheritic inflammations of the pharyngeal tonsil are discussed. Chronic inflammatory adenitis is divided into two types: (a) the hyperplastic form, known more familiarly as adenoid vegetations and (b) the catarrhal form, commonly called the chronic naso-pharyngeal catarrh of adults.

In thirty post-mortem examinations in subjects over 50 years of age he has found but one case of hyperplasia of the pharyngeal tonsil. An exhaustive description of the clinical symptoms and the effect of these local conditions on the general constitution is presented.

Another chapter treats of the various methods of operative technic. complications, dangers, recurrences, etc.

There are six full-page plates which illustrate the histo-pathology described in this monograph.

A System of Treatment. By Many Writers. Edited by Arthur Latham, M.A., M.D. (Oxon), F.R.C.P. (Lond.), Physician and Lecturer on Medicine, St. George's Hospital; and T. Crisp English, M.B., B.S. (Lond.), F.R.C.S. (Eng.), Senior Assistant Surgeon and Lecturer on Practical Surgery, St .George's Hospital. Volume I, General Medicine and Surgery; Volume II, General Medicine and Surgery; Volume III, Special Subjects; Volume IV, Obstetrics and Gynecology. Price, $24 net for four volumes. New York: The Macmillan Company, 1912.

The four volumes contain 4764 pages, exclusive of the 133 pages in each volume devoted to an index of the complete work. "The aim of the volumes is to provide the general practitioner with a series of practical articles, in as concise a form as possible, describing the modern methods of dealing with all diseases, and written by those who have had special experience in the subjects with which they deal." By assigning these topics to many of the best-known authorities in Great Britain, the whole work has been written within the past two years, and, therefore, represents the latest procedures as practiced by our British confreres.

Volume I includes such topics as the general principles of treatment, surgical technic, shock, tumors, infectious and constitutional diseases, intoxications, injuries, and diseases of the respiratory and circulatory systems. Among the authors are Sir Havelock Charles, Mr. Arbuthnot-Lane, and Dr. Mitchell Bruce.

In Volume II diseases of the blood, thyroid, lips, jaws, mouth, tongue, palate, salivary gland and esophagus are considered. The greater portion of the volume, however, treats of the diseases of the organs of nutrition, reproduction, and excretion.

Volume III is devoted to special subjects, e. g., anesthetics, induced hyperemia, ionic medication, climatology, physical exercise, vaccine and serum therapy, radium therapy, tropical diseases, and diseases of the skin. About one-half of the volume considers the therapy of diseases of the eye, ear, nose and throat and includes among its authors Harold Grinsdale, E. E. Maddox, Lambert Lack, Chevalier Jackson, P. Watson Williams, Thomas Guthrie, William Milligan, Richard Lake and James Kerr Love.

Volume IV is devoted to obstetrics and gynecology. J. W. Ballantyne, John Bland Sutton, E. H. Tweedy are among the contributors. The work, therefore, will be found both comprehensive and authoritative. EDGAR.

Die Stoerungen der Sprache. Versuch einer Pathologie der Sprache. (Speech Defects.) By DR. ADOLF KUSSMAUL, Strassburg. Pp. 409. Verlag F. C. W. Vogel. Leipzig, 1910. Price, M. 10.

For over a quarter of a century this important treatise on defects of speech by Kussmaul has been regarded as a classic contribution to the literature of this special field and to the establishment of a definite pathology of speech.

With due deference and respect to the teachings of this eminent authority on speech-defects and speech-pathology, the editor of this new fourth edition, the well-known Professor Gutzmann of Berlin, has preserved the original text of the master and has added such notes and commentaries as he has found necessary to bring this important volume up to date, to assimilate the new theories with the old, and to modify the older ideas and incorporate the newer thoughts and results.

It is a splendid work and one that deserves the careful study of every oto-laryngologist who desires to follow the development and progress made in the last quarter of a century in this especially important subject of speech, its defects and its diseases.

The commentary and supplement found as an addition to each chapter. prepared by one of our most eminent authorities of to-day, but adds to the strength and importance of the original monograph.

Heredity and Eugenics. A Course of Lectures Summarizing Recent Advances in Knowledge in Variation, Heredity and Evolution, and its Relation to Plant, Animal and Human Improvement and Welfare. By WILLIAM ERNEST CASTLE, JOHN MERLE COULTER, CHARLES BENEDICT DAVENPORT, EDWARD MURRAY EAST AND WILLIAM LAWRENCE TOWER. Cloth. Price, $2.50 net. Pp. 315. Chicago: University of Chicago Press, 1912.

The title of this volume almost anticipates the work of the reviewer: "A course of lectures summarizing the recent advance in the knowledge in variation, heredity and evolution, and its relation to plant, animal and human improvement and welfare."

The first two chapters by the eminent botanist, Professor John Merle Coulter, presents the question of current thought on the physical condition of heredity from the botanical point of view.

Then follow four chapters on "Methods of evolution" and "Heredity and Sex," by Professor Castle, and on the "Application of Biologic Principles," by Professor East. In these chapters Mendel's laws are tersely described and applied to experimental conditions.

Professor Tower considers the theories of the germ-plasm and their influence in a chapter on "Modification of germinal constitution of organisms."

The concluding chapter, by Dr. Davenport, on the "Inheritance of physical and mental traits," deals most definitely with the problem of practical eugenics as it refers more especially to the field in which our readers are more vitally interested, namely the problem of the defective child.

Eugenics is becoming so distinctly an integral part of medical science because of its close association with all problems connected with the study of the child, and especially of the defective child, that its importance and influence in this field must not be underestimated.

A careful reading of this course of lectures must certainly prove profitable, interesting and broadening to every oto-laryngologist.

Die Funktionspruefungen des Ohres. Pruefungen des Gehoers und des Bogengangsapparates. Ein Grundriss fuer den Praktiker. (Functional Tests of the Ear). By Dr. F. Kobrak, Berlin. Pp. 38, with 14 illustrations. Verlag Johann Ambrosius Barth, Leipzig, 1911. Price, M. 1.20.

This monograph includes the usual hearing-tests and the more recently developed functional tests to determine the activity or disturbance of the function in the labyrinth.

Among the paragraphs of special interest may be noted those on functional tests in cases of simulation of both unilateral and bilateral assumed deafness; a brief discussion of the present physiological theories in the reactions of the semi-circular canal; and the tests which have been elaborated to develop disturbed function in this important part of the labyrinth including the various forms of nystagmus-tests by rotation, thermal and electric stimulation, and spontaneous nystagmus together with the significance and clinical conclusions of these results.

This little monograph is well-adapted as a concise review for the otologist as well as a thorough guide for the internist and general practitioner.

Pathologische Anatomie des Ohres. (Pathological Anatomy of the Ear). By Rudolf Panse, Dresden. Pp. 239, with 208 drawings by the author from his own preparations, and 4 schemas. F. C. W. Vogel, Leipzig, 1912. Price, M. 13.50.

The laboratory and chemical investigations and research which Panse has instituted for many years in the important field of the pathological anatomy of the ear, especially of the labyrinth, and the enormous resources placed at his disposal for this work qualify him to a most extraordinary degree for the presentation of this valuable volume.

If we were to single out the one prominent feature of this work it would perhaps be the reproduction of his splendid collection of microscopic specimens together with their accurate description, presenting in detail the histo-pathology of the structure of the tympanic cavity and of the labyrinth in their various pathologies.

The question of the pathology of otosclerosis and deaf-mutism in their microscopic presentation is a replica of his excellent monograph in these important subjects. We regard this volume as one of the most valuable contributions in recent otological work.

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Note:—All titles marked with a * are abstracted under their respective numbers in the second section. All articles marked with a † have appeared as original papers in THE LARYNGOSCOPE and are referred to as such. Abstracts prepared by the collaborators of THE LARYNGOSCOPE are signed as such. Author's abstracts are signed A. A. Abstracts signed ED. have been prepared at the home office of this journal. Those signed Ex. have been published in other journals.

Authors are requested to notify us of errors or omissions.

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V. DIPHTHERIA AND THYROID GLAND.

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DIGEST OF OTO-LARYNGOLOGY.

1

Gumma of the Nasal Septum Cured by Salvarsan. JOSEPH H. ABRAHAMS, *Proc. N. Y. Acad. of Med.*, Feb. 28, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1140, Sept., 1912.

4

Submucous Resection of the Nasal Septum. W. L. BALLENGER, *Proc. Phila. Laryngol. Soc.*, June 3, 1912.

Abstracted in THE LARYNGOSCOPE, p. 155, Feb., 1913.

6

Erectile Tumor of Nasal Septum. L. BAR, *Rev. hebd. de Laryngol.*, June 29, 1912, p. 753.

Apropos of two cases histologically examined, Bar studies the tumor of the septum known as "bleeding polypi" or as "fungus hematodes." He points out the infrequency and seriousness of this condition. The author acknowledges the advantages of removing such polypi with the cold-snare, yet prefer electrolysis in spite of the slowness of the procedure. ED.

7

Sarcoma of the Nasal Septum. BERTRAN AND CASTILLO, *Bol. de Laringol.*, April-June, 1912.

Five operations had been already been performed on the woman when the authors removed the tumor with the cold snare and scraped the area, and also burned the site with the galvano-cautery. No recurrence since a year. ED.

9

Some Considerations in Reference to the Nasal Septum. W. R. BUTT.

Original contribution to THE LARYNGOSCOPE, p. 1351, Dec., 1912.

17

Report of Two Cases of Abscess of Nasal Septum. J. A. M. HEMMEON, *N. W. Medicine*, Feb., 1912, p. 60.

One of these cases resulted from trauma and the other was probably of syphilitic origin. Both recovered after incision. This disease is rare; in addition to trauma, typhoid fever, small-pox, influenza, sinus suppuration and tubercles are the usual causes. ED.

23

Submucous Resection of the Nasal Septum; Analysis of 130 Cases. D. MCKENZIE, *Jour. of Laryngol., Rhinol. and Otol.*, Feb., 1912, p. 84.

McKenzie discusses the indications for, the details, the difficulties and troublesome sequelae of the operation. He feels, however, that this operation is perfectly safe and that in suitable cases there is no operation in surgery where the patient risks so little to gain so much. ED.

24

Fibroma of the Septum. MEGIAS, *Espana Med.*, Sept., 1912.

Megias reports an unusual case in which the tumor was removed with the cautery snare and discusses the etiology. ED.

25

Infiltration Anesthesia in Submucous Resection of Nasal Septum. I. SOBOTKY, *Boston Med and Surg. Jour.*, Feb. 1, 1912.

Anesthesia is produced by the hypoperichondrial injection of a normal salt solution to which a few drops of adrenalin have been added. Injections are made on both sides of the septum through the perichondrium; cocain is applied so as to render painless the introduction of the needle of the syringe. ED.

35

Recurring Adenoids in Children. L. FISCHER, *Jour. A. M. A.*, Jan. 13, 1912, p. 106.

Fischer points out that a recurrence of adenoid vegetation may be due to lack of proper aseptic precautions at the time of operation. If, however, these were taken we should look for syphilis as the underlying factor. In such cases the Wassermann reaction will be found of great diagnostic value. ED.

40

Recurrence of Adenoids. T. GUTHRIE, *Lancet*, April 20, 1912.

Guthrie feels that true recurrence of adenoid tissue seldoms occurs, if the removal was complete and the surface was left smooth and free from any palpable fragments. When the child is under 4 years the chances of recurrence are much greater, between 4 and 7 the risk is less, and after 7 years almost *nil*. Recurrence is favored by an attack, within a short time of the operation, of one of the specific fevers (measles or whooping cough); by congenital syphilis; or by the presence of untreated anterior nasal obstruction, especially hypertrophied inferior turbinals. ED.

44

Influence of Adenoid Vegetation and Antral Lesions or Dental Pathology. L. H. LANIER, *Med. Fortnightly*, May 25, 1912.

Enlarged adenoid tissue should be removed before the bones of the face are fixed. If, however, deformity has resulted, a good orthodontist should be consulted. In cases of antral lesion, dentist and rhinologist should work in unison. ED.

53

Creatinin and Creatin Excretion in Recurrent Vomiting; Relation of Adenoids and Recurrent Vomiting. J. P. SEDGWICK, *Am. Jour. of Dis. of Children*, April, 1912.

After reviewing the theories advanced concerning the etiology of recurrent or periodic vomiting, Sedgwick reports a series of twenty-two cases of which twenty had adenoids or enlarged tonsils. Most of them had fever before or during the attack. The posterior cervical glands were enlarged. A very common prodrome of the attack was sore throat or nasal discharge. One "had bleeding nose at the time of the attacks." Geographical tongue and asthma were noted.

He also showed by the detailed report of eight cases that these attacks were either improved or entirely relieved since the removal of the adenoids. HALSTED.

59

Public Agitation and Some Unnecessary Adenectomies. C. B. YOUNGER, *Jour. A. M. A.*, p. 111, Jan. 13, 1912.

Though Younger admits that hardly any operation has produced as satisfactory results as adenectomy, still he feels that the operation is occasionally needlessly performed when the real cause of the trouble is hypertrophic rhinitis, high-arched palate, protruding front teeth, hypertrophied faucial tonsils or an anterior deviation of the spine protruding on the naso-pharyngeal space. Occasionally even large adenoid growths cause little or no disturbance in breathing if the naso-pharynx is spacious. Operators should be conservative since the physiology of these tonsillar structures is unknown. ED.

60

Immunization Against Hay-fever. T. ALBRECHT, *Deut. med. Wchnschr.*, May 9, 1912.

Albrecht reports twelve cases of hay-fever cured by the use of pollen-antitoxin. The effect of a dose lasts for days, and finally the attacks are overcome entirely. ED.

74

Experimental Research on Influencing Sexual System by Operations on Nose. KOBLANCK AND H. ROEDER, *Berl. klin. Wchnschr.*, Sept. 30, 1912.

Though the animals operated upon so as to destroy the so-called genital points in the nose grew as well as the controls, they seemed sexually indifferent and their genital organs were found practically rudimentary. Very likely there is some close connection between these points and the hypophysis. ED.

81

Spasmodic Coryzas and Their Treatment. E. PERCEPIED, *Rev. hebd. de Laryngol.*, p. 417, April 13, 1912.

Percepied mentions the various forms of rhinitis vasomotoria and briefly discusses the most recent data concerning the pathology, anaphylaxis and therapy, especially the sero-therapy. General systemic treatment is also recommended. ED.

85

Critical Study of the Relation Between the Nose and Sexual Organs. SEIFERT, *Ztschr. f. Laryngol.*, p. 431, Bd. 5, Heft 3, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1381, Dec., 1912.

99

Case of Adeno-carcinoma of the Nose. L. D. ALEXANDER, *Proc. N. Y. Acad. of Med.*, Oct. 23, 1912.

Abstracted in THE LARYNGOSCOPE, p. 147, Feb., 1913.

100

Histological Findings in an Unusual Case of Papilloma in the Nose. G. ANZILOTTI, *Arch. ital. di Otol., Rinol. e Laringol.*, No. 1, 1912, p. 8.

Abstracted in THE LARYNGOSCOPE, p. 1285, Nov., 1912.

103

Deformity of External Part of Nose Due to Polyps and Tropical Gundu. H. BURGER, *Monatschr. f. Ohrenh*, p. 513, Bd. 46, Heft 5, 1912.

The author describes the cases of nasal polyps causing external deformity of the nose in three children having the same parents. Two of the little ones showed negative Wassermann, one of them gave a positive reaction, but without history of acquired or congenital syphilis. The cases were relieved by removal of the polyps. Burger states that cases of nasal deformities from polyps are really not so rare as a perusal of the literature would lead one to suppose. The tropical disease gundu produces results similar to those seen in some of these cases of polyps.

SONNENSCHEIN (STEIN).

104

Fibroma of the Nose and Naso-pharynx with Sudden Malignant Degeneration. V. DABNEY.

Original contribution to THE LARYNGOSCOPE, p. 960, July, 1912.

107

Case of Cavernous Angioma of the Nose in a Child. W. FREUDENTHAL. *Proc. N. Y. Acad. of Med.*, Jan. 24, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1073, Aug., 1912.

118

Dermoid Tumors on Anterior Wall of Nose. E. RICHARDS. *Rev. hebd. de Laryngol.*, p. 721, June 22, 1912.

The author reviews previous literature and discusses Burger's statement that trauma may cause dermoid tumors resembling those of congenital origin.

ED.

145

Appeal for Undertaking an International Collective Investigation of Ozena. A. ALEXANDER, *Jour. of Laryngol., Rhinol. and Otol.*, April, 1912, p. 188.

This appeal of Alexander presented before the International Laryngo-Rhinological Congress in Berlin, resulted in the formation of a committee to undertake an investigation of ozena. The fundamental questions to be considered are: occurrence, frequency, and heredity or infection.

ED.

148

Results Obtained by Removal of the Hypophysis. ASCOLI AND LEGNANI, *Muench. Med. Wchnschr*, March 5, 1912.

The authors have removed the hypophysis in dozens of animals during the last three years. They find that removal causes growth to cease; ossification and dentition are retarded; the bones become thin, malformed, often presenting cavities and spontaneous fractures; sexual maturity is not reached; the spleen and thymus are abnormal, and the thyroid too shows changes though less marked than the other glands. The operation caused little trauma.

The authors conclude that the hypophysis is a vital organ since most of the dogs upon whom the operation was performed, died in two or three days.

ED.

151

The Nose in Relation to Pathology of the Larynx and Deeper Air Passages.

E. BARTH, *Med. Klinik*, April 7, 1912.

Barth points out the frequency with which affections of the upper and deeper air passages are due to faulty nasal breathing. He emphasizes the importance of examining the nose and naso-pharynx with especial reference to nasal breathing in all affections of the air tract and especially in recurring laryngeal and bronchial affections. ED.

152

Nasal Obstruction As An Early Symptom of Cardio-renal Disease.

W. M. BARTON, *Med. Rec.*, p. 382, Aug. 31, 1912.

Patient had been troubled with nasal obstruction for twenty years. Condition became aggravated and he consulted a rhinologist who excised some hypertrophic tissue from each nostril. This relieved the symptoms of obstruction for a time, but after several years the dyspnea returned accompanied, one night, by intense retching and coughing; and the expectoration of large amounts of thin, frothy, mucoid sputum. At the same time the quantity of urine excreted was greatly diminished, the legs, feet and hands were swollen and there was an occasional stinging pain over the heart. Twenty-four hours after the administration of the digitalis the nasal obstruction was relieved and disappeared entirely the next day.

153

Contribution to the Etiology, Pathology and Treatment of Atrophic Rhinitis.

J. C. BECK, *Ann. of Otol.*, March, 1912, p. 209.

Beck has always felt that the sinuses, especially the ethmoid are always involved in atrophic rhinitis, but he could not determine whether this infection was primary or secondary. He finds the predominance of female patients with this affection is striking (46:11). In every case a blood examination was made, especially for the quantitative fibrin test.

Treatment is daily, consisting of removal of crusts. An oxygen tank is ordered for home-use which the patient is directed to use a few minutes morning and night. After a week an autogenous vaccine is used from a culture made on the first day. If the patient does not improve the middle turbinate is removed and the ethmoid curetted. After two months the muco-perichondrium and periosteum are dissected and paraffin injected. This method of injecting paraffin was employed, since by Beck's former technic little could be injected without having it perforate and escape into the free nasal chamber. ED.

157

Access to the Hypophysis and Sinus Cavernosus by Supra-hyoid Pharyngotomy.

C. BIEHL, *Zntrlbl. of Chir.*, Jan. 6, 1912.

Biehl has thus far only tried this procedure on the cadaver. He proceeds as follows: He first performs suprahyoid pharyngotomy. The head is then lowered and the operation continued by reflected light. The soft palate is grasped and pushed forward, and the roof of the pharynx exposed to the bifurcation of the septum. The soft parts are scraped with a raspatory (adrenalin or there-like would have to be in human).

The inferior wall of the sphenoid sinus close to the septum is removed. The size of this sinus is ascertained by exploring with a curved probe. The Hajek bone-punch is then employed for removing the floor and roof, and thus the hypophysis is approached. At this step of the operation the cavernous sinus could also be entered. ED.

158

Removal of Hypophysis Tumor Through Anterior Cranial Fossa. BOGOJAWLENSKY, *Zntrlbl. f. Chir.*, Feb. 17, 1912.

The patient, a man of 35, had had the symptoms of hypophyseal tumor for two years. With the exception of a little effusion under the flap which was removed the day after the operation, the patient made a rapid and uneventful recovery; vision was undisturbed. Because of this successful outcome Bogojawiensky argues for the following means of approaching hypophyseal tumors: The opening into the anterior fossa is made by cutting a flap (9 cm. long) in the frontal bone; in six weeks this flap is turned back; the dura then cut in an H-shape and turned back. The right frontal lobe is then separated from the roof of the orbit. In the case reported this procedure brought the tumor clearly into view. ED.

162

Lymphatic Apparatus of the Nose and Naso-pharyngeal Cavity in its Relation to the Other Parts of the Body. J. BROECKAERT.

Original contribution to THE LARYNGOSCOPE, p. 209, March, 1912.

166

Congenital Edematous Prolapse of the Nasal Mucosa in the New-born. U. CALAMIDA, *Arch. intern. de Laryngol.*, July-Aug., 1912, p. 61.

In one of the cases the tumor had to be removed; in the other recovery was obtained by the use of cocain, menthol and suprarene injection. ED.

167

Sero-diagnosis of Ozena. C. CALDERA AND M. GAGGIO, *Arch. intern. de Laryngol.*, July-Aug., 1912, p. 85.

If ozena is an infective disease due to the presence of a specific micro-organism, its presence should be demonstrable by the complement fixation test. Ten marked cases were studied by the author with negative results. Sobernheim and Wassermann also obtained negative results with the Wassermann reaction in cases of atrophic rhinitis. The conclusions are that ozena is probably not due to the presence of any specific micro-organism. ED.

176

Access to Hypophysis. O. CHIARI, *Wr. Klin. Wchnschr.*, p. 1, Jan. 4, 1912.

In these two of Chiari's cases reported in this article the author approached the hypophysis by incising from the inner edge of the orbit along the outer margin of the nasal bone down to the maxillary process. The eyeball is drawn outward and then the outer wall of the sphenoid sinus resected. Through the posterior nasal and sphenoidal septa the hypophysis is exposed. The advantages of this method of procedure are:

absence of much scar-formation; minimum disfigurements; small portion of nasal structure removed; possibility of completing operation at one sitting; no greater danger of infection than by other methods. Ed.

180

Physio-pathological Relations Between the Hypophysis and Various Chronic Affections of the Naso-pharynx and the Sphenoidal Cavities. Citelli, *Ann. des Mal. de l'Oreille*, p. 1, No. 1, 1912; and *Ztschr. f. Laryngol.*, p. 513, Bd. 5, Heft 3, 1912.

Abstracted in The Laryngoscope, p. 123, Feb., 1913.

182

Atrophic Rhinitis from a Bacteriological Standpoint, And Its Treatment by Vaccines. Frederic C. Cobb and E. W. Nagle, *Ann. of Otol.*, p. 463, June, 1912.

The authors report the use of vaccine made from the Abel bacillus (bacillus mucosus ozenae), the cultures being taken from ninety cases of atrophic rhinitis, the vestibule being previously sterilized. All showed a pure culture of the atrophic bacillus. Each one had previously had local treatment without benefit.

Forty patients received vaccine from four injections up to forty-six injections. Only twenty came for treatment at the required intervals. No bad effects from the vaccine were noticed. One patient, while objectively better, could herself see no signs of improvement. In all cases, if the patient was using a wash, no change was made during the inoculation, and no local treatment was given. No history of the duration of the disease could be obtained, but in most of the cases it had lasted as long as the patient could remember. Of six cases injected two years ago, only two could be found.

The vaccine injections, if carried out regularly, seem to produce permanent improvement. Irregular or small number of injections cannot be counted on with the same certainty, but marked improvement seems to have followed even in these cases. Each cubic centimeter of the vaccine contains one hundred million bacteria, and the dose varied from one-tenth of a cubic centimeter to one and a half centimeter.

184

Two Cases of Tumor of the Hypophysis. H. Coppez and A. Van Lint, *Jour. Med. de Brux.*, March 1912, and *Allg. Wr. Med. Ztschr.*, June 18, 1912.

Two new cases are added to the authors' previous reports on five. The prognosis depends upon ascertaining as soon as possible whether the disorder is a hypertrophy of the gland or a tumor, for in the former case operation is of no avail. Ed.

196

One Hundred Cases of Ozena Cured by Light Rays. I. Dionisio, *Arch. ital. di Otol.*, Vol. 23, No. 5, 1912, p. 359.

In twenty-three of the cases complete recovery was effected, and in thirty-eight, marked improvement; in twenty-nine the improvement was but slight and transient. The best results were obtained with the Geissler tubes. Ed.

204

Membranous Rhinitis; Its Relation to Diphtheria. D. FORBES AND H. P. NEWSHOLME, *Lancet*, Feb. 3, 1912.

The authors found in an epidemic among school children such an intimate connection between membranous rhinitis and diphtheria to lead them to conclude that a causal relation existed between the two. This fact would point to the urgency of recognizing early a membranous rhinitis. Autogenous vaccine therapy is of great use in removing the membrane, eliminating the nasal discharge, and thus greatly reducing the infectivity of the rhinitis. However, after the membrane has gone, this form of treatment is not effective. ED.

208

Report of Three Cases of Syphilis of the Nose and Throat Treated with Salvarsan. W. FREUDENTHAL, *Proc. N. Y. Acad. of Med.*, Jan. 24, 1912

Abstracted in THE LARYNGOSCOPE, p. 1075, Aug., 1912.

209

Affections of Pharynx and Larynx in Syringo-myelitis. B. FREYSTADTL. *Arch. intern. de Laryngol.*, p. 697, May-June, 1912.

Freystadtl reviews the literature and reports three of his own cases. In twenty-four cases an entire recurrence took place and in eighteen a unilateral or bilateral paralysis of the posterior nerve. Unilateral paralysis of the posterior nerve is often not observed because it creates little disturbance. ED.

212

Sero-diagnosis of Ozéna. M. GAGGIA, *Arch. f. Laryngol.*, p. 45, Vol. 26, Heft 1, 1912.

The authors find that there is no deviation in the complement and conclude that ozena does not cause a general organic reaction nor a circulatory blending which would fix the complement. However, to conclude from this that ozena is not of infectious origin would not be justified since there are known infectious diseases which do not fix the complement. ED.

215

Fracture of Nose in Boxers. R. GAUTHIER, *These de Paris*, 1912.

Abscesses, rhinites, sinusites and permanent malformation of the septum and of the nares with complete obstruction may result from accidents to boxers. Immediate treatment often prevents these pathological and esthetic disturbances. ED.

217

Topography of the Hypophysis Cerebri. W. S. GIBSON, *Surg., Gynecol. and Obstetr.*, Aug., 1912.

The following averages were obtained by Gibson from measurements on 107 skulls: Nasion to sella turcica, 62 mm.; nasion to posterior surface of dorsum sellae, 75 mm.; anterior nasal spine to sella turcica, 78 mm.; anterior nasal spine to clivus, 88 mm.

With a very few exceptions, variations from the averages given above do not exceed 1 cm. Hence the measurements are sufficiently constant to be of practical value. The important variations in the region of the sella turcica with frequency of occurrence are as follows: Complete or practical absence of sphenoidal sinuses, 3 per cent; small sphenoidal sinuses, 9 per cent; thick anterior wall of sella turcica, 9 per cent; no projection of sinuses beneath sella turcica, 22 per cent.

In any one of the above variations the fact that the sella turcica does not budge into the sphenoidal sinuses would make it extremely difficult for the surgeon to determine its exact position.

Thin posterior wall of sphenoidal sinuses, 35 per cent. With only the merest shell of bone protecting the pons, its liability to injury is easily seen. Transverse sphenoidal septum, 2 per cent. Should this septum be mistaken for the floor or roof of the sphenoidal sinuses, the true position of the sella would be obscured. Downward curvature of cribriform plate, 4 per cent. Shallow sella turcica, 8 per cent. The presence of either of the above conditions might cause the surgeon to pass completely beneath the sella. Downward direction of superior surface of sphenoid between optic groove and anterior superior margin of sella turcica, in which optic chiasm would be endangered, 6 per cent. Thirty-four skulls do not present any of the variations cited above, hence offer favorable conditions for approach to the hypophysis.—*Ex.*

223

Lymphatics of Nose and Naso-pharynx with Consideration of the General Lymphatic System. H. J. Hartz.

Original contribution to The Laryngoscope, p. 165, March, 1912.

224

Position of the Sinus Transversus in Connection with the Form of the Naso-pharyngeal Cavity. J. C. Henkes, *Ned. Tijdschr. v. Geneesk.*, Jan. 20, 1912.

Henkes finds that in cases of high but not deep naso-pharyngeal cavities the sinus transversus projects forward, while in low deep naso-pharyngeal cavities it is situated far back. Ed.

227

Operative Treatment of Hypophyseal Tumor by the Endo-nasal Method. O. Hirsch, *Arch. f. Laryngol.*, p. 529, Bd. 26, Heft 3, 1912.

Hirsch minutely describes 26 cases of tumors of the hypophysis which he operated endonasally, either by the ethmoidal method (in three or four sittings) or by the septal method. Three cases ended fatally, in 5 the improvement was but temporary, in 2 the tumor was not removed, in 1 there was an intra-cranial chondroma; the other 14 cases were markedly improved. Operation should be undertaken in every case with disturbed vision whether the tumor be intra-cranial or intrasellar. Acromegalic deformity alone is not indication of operative interference. Ed.

228

Case of Hypophysis Tumor Successfully Operated After Hirsch's Method. G. Holmgren, *Ztschr. f. Ohrenh.*, p. 39, Bd. 66. Heft 1-2, 1912.

Man, aged 40 years. Headache-pains localized in the eyes; scintillation, marked impairment of vision, temporal hemianopsia, concentrically contracted visual field. Roentgen examination revealed destruction of bone beneath sella turcica. Submucous resection, both middle turbinates and anterior wall of sphenoid cavity removed. The tumor had destroyed the entire roof and posterior wall of the sphenoid cavity. No attempt was made to remove the entire tumor, a decompression operation was only performed so as to give the developing tumor room. The subjective symptoms disappeared and the vision was improved. ED.

233

Congenital Median Fissure of Nose and Upper Lip. P. A. JOUVE, *These de Bordeaux*, 1912.

Jouve states as the cause of such deformity alcoholism in the parents which has a dystrophic action and arrests development in the embryo. The only remedy for these conditions is an operative one. ED.

236

Bloodless Enlargements of Nasal Passages. G KILLIAN, *Deut. med. Wchnschr.*, Feb. 1, 1912

In mild cases in which intense swelling of the mucosa and hypertrophy were not present Killian obtained good results by infracture of the middle turbinate by means of a specially devised instrument. This infraction occasionally sufficed to place in position the deviated septum. The author recommends this procedure especially in cases where, on account of advanced age, hemorrhage must be avoided. ED.

242

Hereditary Choanal Atresia. JOHN LANG, *Monatschr. f. Ohrenh.*, Bd. 46, Heft 8, 1912, p. 970.

The author cites several cases of choanal atresia extending through three generations of the same family and deducts the following conclusions: If, despite unilateral and bilateral atresia a normal palatal arch is found, we must accept that this condition excludes the hypothesis concerning the influence of obstructed nasal respiration on the formation of the palate. The higher arch having been found below the unobstructed side in all of these cases, speaks against this hypothesis; also the asymmetry of the arches found in exactly the same obstructions. All afflicted and other members of the family having a high arch were leptoprosopes. The asymmetry of the arch is but a part of the total facial asymmetry and as such may be regarded as a profound germ anomaly.

STEIN (KLEENE.)

247

Tumor of the Hypophysis. J. LESHURE, *Proc. N. Y. Acad. of Med.*, May 22, 1912.

Abstracted in THE LARYNGOSCOPE, p. 139, Feb., 1913.

251

Rhinoscleroma and Salvarsan. W. LIECK, *St. Petersburg Med Ztng.*, May 28, 1912, p. 147.

Lieck reports a case of rhinoscleroma in a woman of 21 years to whom he administered two intravenous injections of salvarsan. In spite of the most careful and prolonged observation no reaction was noted. ED.

254

Deformities of the Nose. F. S. LOVELL, *N. Y. Med Jour.*, Nov. 16, 1912.

Abstracted in THE LARYNGOSCOPE, p. 135, Feb., 1913.

259

The Ozena Investigation in the United States. EMIL MAYER, *N. Y. Med. Record*, June 19, 1912.

At the meeting of the Second International Laryngological Congress, at Berlin, 1911, it was unanimously resolved that a collective investigation of a statistical nature should be held, and this should embrace the whole civilized world. The result of this movement should be reported at the next International Congress in Copenhagen, in 1914. The author has been honored with the appointment of chairman of this country and has formed an executive committee, composed of the members of our various special societies to assist in this extensive undertaking. To obtain accurate data upon this important subject a rather voluminous history blank must be filled out, embracing the numerous questions pertaining to the general condition of the patient and the family history, besides going into the detail of the local manifestations and associate organs. The ultimate report of the various committees should prove most instructive and valuable reading. LEDERMAN.

260

Aseptic Surgical Access to the Pituitary Body and its Neighborhood. L. L. MCARTHUR, *Jour. A. M. A.*, p. 2009, June 29, 1912.

McArthur describes in detail his technic by which the scar is almost unobservable because the incision is in the hair-line of the eyebrow and the normal frontal furrow. ED.

261

Hypophyseal Tumor from the Rhinologist's Point of View; Report of Case. G. MCBEAN.

Original contribution to THE LARYNGOSCOPE, p. 1185, Oct., 1912.

272

Relation of the Tear Duct and Sac to the Nose and Accessory Sinuses. A. ONODI, *Monatschr. f. Ohrenh*, Bd. 46, Heft 4, 1912.

The anatomy of the tear duct and sac, the membranous and bony formation and its relation to the nose and accessory sinuses is studied exhaustively. In the second part surgical procedures in this region are reviewed.

In the experience of the author and others, the secondary diseased conditions in the tear conducting apparatus is caused by ethmoid trouble in the largest number of cases. The method of Toti is described and should be used according to Onodi in such cases where with the obstruction of the tear flow, a marked enlargement of the tear sac is present. Where there is no tear sac enlargement, the endo-nasal window-resection of West is indicated. In cases of complete stenosis or in antrum empyema the methods of Eicken, i. e. opening the nasal end of the tear duct through the antrum of Highmore, is indicated. GEIGER (STEIN).

273

General Bacteriemia Following a Nasal Operation. S. OPPENHEIMER, *Proc. N. Y. Acad. of Med.*, Jan. 24, 1912.

Abstracted in THE LARYNGOSCOPE, p. 991, July, 1912.

274

Supernumerary Tooth in the Nasal Cavity. K. ORLEANSKI. *Ztschr. f. Laryngol.*, Bd. 5, Heft 2, p. 319, 1912.

In a girl of 12 with an atrophic rhinitis a perforation was found in the hard palate, a condition which was at first considered due to lues. A tooth was visible in the hard palate at the edge of the perforation. This tooth looked like an upper left canine. The teeth in the alveolar process were normal in form and number. The patient had noticed the appearance of the supernumerary tooth in the hard palate, a year ago, at about the time that the gummous processes were taking place in the nose and hard palate. The author concludes that the tooth lay originally in the nose and was brought out through the syphilitic disturbance. ED.

275

Sporotrichosis of the Nose. PAUTRIER AND RICHOU, *Bull. d' Oto-Rhino-Laryngol.*, p. 54, Jan., 1912.

Case of sporotrichosis of the nose in which the condition was only with difficulty differentiated from tertiary lues. On the cheeks, mouth, and ala nasi partly ulcers and partly infiltrated. Nose soft and flexible. Bony part of septum perforated; similar lesions on skin; Wassermann negative; culture disclosed sporotrichosis. Improvement after use of potassium iodid. ED.

276

Malformations of the Olfactory Apparatus in Man. PERNA. *Jubilee Book of Prof. Augusto Murri*, 1912.

Abstracted in THE LARYNGOSCOPE, p. 205, March, 1913.

280

Lymphatic Apparatus of the Nose in its Relation to the Rest of the Body. C. POLI.

Original contribution to THE LARYNGOSCOPE, p. 184, March, 1912.

283

Acute Rhinitis in the New-born. RABASA, *Bol. Med.*, April, 1912.

The author points out that coryza is not only a troublesome but also a serious affection in childhood because the nasal obstruction interferes considerably with feeding and also causes complications in the ears (otitis) or larynx (glottic spasms). The origin and therapy is discussed. Rabasa prefers the suction treatment by means of the Escat apparatus or an ointment preparation of resorcin and aristol to other method. ED.

291

Partial Bilateral Choanal Closure Through a Plica Retro-nasalis Transversa Congenita. FRITZ SCHLEMMER, *Monatschr. f. Ohrenh.*, Bd. 46, Heft 9, p. 1161, 1912.

Patient 44 years old applied for treatment of left chronic antral disease, when on inspection, a bridge of tissue crossing both choanae transversely from one tubal eminence to the other was found, not obstructing their superior and inferior borders, however. No adenoid vegetations in the vault. No luetic history; Wassermann negative.

Removal under local anesthesia, (following a radical Caldwell-Luc operation) with Hartmann's conchotome and cold wire snare. Histologically, the strand was composed of squamous epithelium, a thin layer of vascularized connective tissue and a thick layer of adenoid tissue containing densely massed lymph follicles, some of which showing reorganizable genetic centers.

The absence of adenoid vegetations in this case is especially mentioned. KLEENE (STEIN.)

292

Rhinitis Hyperplastica. W. SCHOENFELD, *Ztschr. f. Laryngol. Rhinol. u. ihre Grenzgeb.*, Bd. 5, Heft 2, 1912, p. 299.

Abstracted in THE LARYNGOSCOPE, p. 1139, Sept., 1912.

299

Agenesis of the Accessory Hypophyseal System with Normal Hypophysis Cerebri and Acromegalic Giantism and Sexual Infantilism. G. SOTTI AND U. SARTESCHI, *Arch. ital. de Biol.*, p. 22, June 12, 1912.

Man of 76 years; acromegalic giant with sexual infantilism; no psychic defect; death due to no apparent cause. Study of known site of accessory hypophyseal tissue negative; hypophysis normal; adrenals showed small circumscribed hemorrhagic foci and small-celled infiltration; pineal body small but normal; testes and epididymis small, of fleshy color and consistency; no spermato-genesis; congenital aplasia of prostate. Nervous system and general systemic condition normal. The conclusion is that the conditions in this case were due to a primary congenital alteration of the accessory hypophyseal system. The sexual infantilism shows a functional correlation between the hypophyseal system and the sexual organs. ED.

302

Congenital Lateral Wall Fissure in Connection with Choanal Atresia. L. STUETZ, *Ztschr. f. Ohrenh*, p. 202, Bd. 65, Heft 2-3, 1912.

Since childhood defect in left lateral nasal wall involving the nostril in its dostal portion; complete bony atresia of the left choanal opening and chronic rhinitis. Submucous resection of septum and treatment of rhinitis. Madelung correction of nasal fissure. ED.

304

Case of Congenital Occlusion of the Right Posterior Naris by a Bony Plate. H. B. TAWSE, *Jour. of Laryngol.*, p. 359, July, 1912.

Total congenital occlusion of right side of nose in man of 30 years together with watery discharge from same side. The septum was greatly deviated toward the right and the choana totally closed. Submucous resection of the septum and removal of occlusion with chisel and trephine. In six months the right side of the nose was functioning normally. ED.

312

Tuberculosis Ulcerosa (Orificialis) ala Nasal Mucosa. N. B. TRIMBLE, *Proc. N. Y. Acad. of Med.*, March 27, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1148, Sept., 1912.

313

Lymphatic Apparatus of the Nose and Naso-pharynx in its Relation to the Rest of the Body. A. L. TURNER.

Original contribution to THE LARYNGOSCOPE, p. 197, March, 1912.

314

Congenital Membranous Occlusion of the Choanae. F. VATILLA, *Gac. med. del Norte*, Jan., 1912.

Not more than 100 cases were found by Vatilla in the literature. His case was in a man of 36 years who asserted that he had never breathed through his nose. The nasal fossae were full of mucus which the patient could not expel. With the style a fibrous obstacle was felt; posterior rhinoscopy showed the choanae completely obstructed by a rose-colored membrane enclosed in a choanal osseous covering in the median portion of the lower part of the septum. No olfaction; diminished hearing on right side. Operative correction. ED.

315

Bacillus Leprae in the Nasal Mucous Membrane. F. A. AND F. L. DE VERTEUIL, *Can. Med. Assn. Jour.*, Jan., 1912.

It is now generally accepted that leprosy is propagated by contagion only, direct or indirect; this contagion, however, is evidently of a very low power, certain unknown conditions being required before the disease can pass from one individual to another. While everything in the history of the disease appears to favor its spread by insect agency, and while Goodhue, Sandes, and Long, working independently have succeeded in demonstrating an acid-fast bacillus similar to the bacillus leprae in bedbugs, and mosquitos, fed on the blood of leper patients, still in the forty years' existence of the Trinidad Asylum, there has not been a single case of the disease recorded among the attendant staff, or washerwomen, but two of the chaplains have fallen victims. Prof. Ehlers at the last International Congress on Leprosy, while not denying the possibility of this vehicle of contagion, considered it to be very rare.

Among the other channels of contagion considered have been the alimentary canal, through commensal feeding, the skin by inoculations through abrasions of sores, and the respiratory passage through inhalation. From October, 1910, to April, 1911, a systematic bacteriological examination of the nasal secretion of about one hundred and eighty-five lepers was carried on by the writers at the Trinidad asylum. The bacilli were found in one hundred and five tubercular cases, but in only nine of the anesthetic cases. These figures correspond fairly closely with those of other observers. There is no doubt of the frequent and often early presence of nasal lesion in leprosy even in anesthetic cases. In one case of a girl of 12, epistaxis was the first symptom, and in the nasal discharge were myriads of bacilli. It does not follow however that early nasal lesion is necessarily the primary lesion of the disease. It may be merely that the nasal mucous membrane is particularly susceptible to the attacks of the bacillus when once it has gained access to the human system, in which case the nasal membrane is merely the port of exit for the germs. The frequent absence of nasal lesion in the anesthetic cases is against the nasal theory of infection, but this really may be due to a differing method of infection as these two varieties of leprosy are essentially different in their course and clinical manifestations.

The condition of the nasal mucous membranes in leprous patients should be a continual matter of investigation, as a means of diagnosis and of protection to the attendants, and constant care taken of the secretions from the nose, as a means of prophylaxis. Those who come in close contact with such cases should practice daily nasal douching, and the use of a volatile oil, such as eucalyptus. WISHART.

317

New Light on the Hypophysis Cerebri. I. W. VOORHEES.

Original contribution to THE LARYNGOSCOPE, p. 1043, Aug.. 1912.

322

The International Collective Investigation of Ozena. D. J. GIBB WISHART, *Can. Jour. of Med. and Surg.*, Dec., 1912.

This is a brief account of the appeal made by Professor Alexander to the Third International Laryngological Congress for an investigation of the etiology of this mysterious disease, together with the arrangements for the carrying out of this collective investigation in Canada. A. A.

328

Finger in Rhino-plasty; Improved Technic. BALDWIN, J. F., *Surg. Gynecol. and Obstetr.*, Dec., 1912, p. 720.

To eleven cases recorded in the literature Baldwin adds two of his own in which he used the left ring finger in rhinoplasty. He describes his technic and reports excellent results. ED.

330

Two Cases of Lupus of the Nose Treated with Pure Paramono-chlorophenol. BICHATON, *Rev. hebd. de Laryngol.*, p. 129, Feb. 3, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1037, Aug., 1912.

333

Treatment of Anosmia. H. BOURGEOIS, *Prog. med.*, April 20, 1912.

In anosmia following influenzal coryza, irrigation of nasal passage with cold water, use of irritating antiseptic solutions, tobacco, alcohol, etc., vibratory massage or inhalations of carbon dioxid may be used, or if these measures fail the galvanic current should be employed. ED.

334

Treatment of Lupus of the Nasal Mucosa by Radium. JULES BROECKAERT, *Rev. hebd. de Laryngol. d'Otol. et de Rhinol.*, July, 1912.

One centigramme of bromid of radium, of 500,000 activity, is changed into the sulphate. The radium salt is spread in a malleable silver cup, five by ten millimetres, and is held in position by a special varnish not affected by heat or antiseptics. It is covered by thin rubber which is sterilized before each application. For the larynx and base of the tongue he uses an ordinary laryngeal mirror from which the rubber has been removed and the radium protected and attached by the special varnish. For the nostrils two to four applications of two hours each is sufficient. Broeckaert does not approve of the *destructive method* for the mucous membrane, preferring the *modified method* in which there is a gradual transformation of the irradiated tissues. He reports three cases of success with this method. SCHEPPEGRELL.

335

Transplantation of a Piece of Cartilage into the Septum to Prevent Perforation After Submucous Resection. R. H. BROWN.

Original contribution to THE LARYNGOSCOPE, p. 1347, Dec., 1912.

338

Restoration of Entire Nose by Rhinoplasty and Bone Transplantation. N. W. CARTER, *Proc. N. Y. Acad. of Med.*, Oct. 23, 1912.

342

Salvarsan in Syphilis of the Nose and Throat. F. C. COBB.

Original contribution to THE LARYNGOSCOPE, p. 1084, Sept., 1912.

344

Use of Bacterial Vaccines in Naso-pharyngeal Infections. T. B. COOLEY, *O. State Med. Jour.*, p. 171, April 15, 1912.

In one case of mastoiditis and nasal sinus suppuration following scarlet fever operative benefit was obtained only after the administration of vaccine. Especially good results were obtained in cases of children with chronic middle-ear suppuration in which Friedlaender's bacilli were found. ED.

348

Vaccine Treatment of Hay-fever. H. ELLERN, *Deut. med. Wchnschr.*, Aug. 22, 1912.

Wright's pollen-vaccine was used in thirteen cases of hay fever in all of which improvement took place. However, of twenty patients to whom this was not administered sixteen also recovered during this year. ED.

351

The Upper Position in Ether Operations Upon the Nose, Throat and Other Portions of the Head. T. R. FRENCH, *N. Y. Med Jour.*, p. 1125, June 1, 1912.

French states as the advantages of the upright position the facts that: (1) the surgeon is accustomed to manipulating patients in this position; (2) the fauces can be seen to better advantage; (3) less ether is required due to the diminished blood pressure in the vessels of the head; and (4) the hemorrhage is less. ED.

352

The "L" Incision in the Submucous Resection of the Nasal Septum. E F. GARRAGHAN.

Original contribution to THE LARYNGOSCOPE, p. 759, May, 1912.

353

Nasal Deformity Corrected by Auto-implantation of Septal Cartilage. O. Glogau, *N. Y. Med. Jour.*, Nov. 9, 1912, and *Ztschr. f. Laryngol.*, Bd. 5, Heft 4, p. 613, 1912.

Abstracted in The Laryngoscope, p. 134, Feb., 1913.

356

Bacterins in Hay-fever. H. M. Greene, *N. Y. Med. Jour.*, p. 461, Aug. 31, 1912.

Blood from median vein and swab from eyes, nose, throat and sputum showed the presence of same organism. A bacterin prepared from this organism was administered to the patient who suffered from severe attacks of hay-fever. After the third dose (nine days) improvement was noticed. Ed.

357

Relief of Nasal Obstruction by Orthodontia—A Plea for the Early Recognition and Correction of Faulty Maxillary Development. W. H. Haskin.

Original contribution to The Laryngoscope, p. 1237, Nov., 1912.

358

Care of Nose and Throat in Children. Harold Hay, *Am. Jour. of Obstr.*, Nov., 1912.

The most common portal of entry of infection is through the mouth, the nose deserves second place. (a) Whether the tonsils exercise some individual function such as that of an internal secretion is questioned. During first two years tonsils should not be removed unless they cause some definite symptoms, such as impairment of breathing, attacks of tonsillitis, or tendency towards suppuration of glands of neck. If it is necessary to remove tonsils enucleation is the only operation permissible. (b) Children with high arched palate and narrow nasal orifices should be referred to the orthodontist. (c) Adenoids, if present, should be removed. (d) The sinuses of the nose are more open to infection than one usually supposes. A so-called cold in the head, discharging pus, excoriations around nostrils, red and swollen mucous membrane are the usual symptoms. For this class of cases Dr. Hays recommends the use of a spray in older children and a medicine dropper for younger children, using liquid albolene having a few drops of 1-10,000 adrenalin solution, or if using boric acid or an alkaline solution, it should be followed by an oily solution. Halsted.

360

Transplantation of Rib for Depressed Deformity of the Nose. H. Hays, *Med. Rec.*, June 22, 1912, p. 1177.

Abstracted in The Laryngoscope, p. 1146, Sept., 1912.

362

Accidental Exposure of the Meninges During Intra-nasal Operations. J. B. Horgan, *Jour. of Laryngol.*, p. 652, Dec., 1912.

Horgan reports two cases in which he accidentally exposed the dura during operations on the nose without any untoward effects. Ed.

364

Correction of Deformities of the Alae Nasae. A. IWANOFF, *Ztschr. f Laryngol.*, p. 969, Dec., 1912.

The cosmetic operations on the nose are numerous. According to their originators they do not seem to vary as to the excellency of the results obtained. The methods differ from one another only by the material implanted into the deformity. The writer of this article transplanted into a luetic deformity of the ala nasae a piece of cartilage of the auricle. In another case the deformed cartilage of the ala nasae was subcutaneously removed and reimplanted. The results, of course, are excellent, but "time and further observation will decide, how long the transplanted cartilage will stay, whether or not it will be resorbed and whether the deformity will recur."

The writer did not even try to convince the reader of the excellency of his method by adding photographs of the patient before and after the cosmetic operation. The great Austrian poet, Grillparzer, once said: 'A poem should never be published, before it is hidden within the desk for one year." Would it not be advisable to postpone the publication of new cosmetic operations until the supposed splendid results lasted long enough to allow of the presumption of a permanent correction of the deformity?

GLOGAU.

365

New Procedure for Reduction of Turgescent Turbinals. F. B. KELLOG, *Jour. Ophth., Otol. and Laryngol.*, Nov. 1912, p. 437.

The new feature introduced by Kellog is the longitudinal incision with a nasal saw through the soft tissue and slightly into the bone. The hemorrhage is controlled by packing, which is changed in twenty-four hours and removed after forty-eight. Good results are claimed. ED.

366

Treatment by the Orthodontist Supplementing That by the Rhinologist. A. H. KETCHAM.

Original contribution to THE LARYNGOSCOPE, p. 1286, Nov., 1912.

367

Reduction of Nose and Other Methods of Nasal Plastic. F. KOCH, *Russ Monatschr of Ohrenh.*, April, 1912.

Koch gives a detailed description of three cases of marked nasal deformity in which operative correction was attended with very good results. ED.

368

Operations on Nose to Correct Deformity. E. KOEHLER, *Med. Klinik*, June 29, 1912.

Four corrective methods are indicated. In cases of saddle-nose paraffin injections produced good results. ED.

373

Direct Posterior Rhinoscopy According to Arpad de Gyergyai. F LAVAL, *Rev. hebd. de Laryngol.*, p. 1, Jan. 6, 1912.

This procedure is especially recommended for operative work. The naso-pharynx is cocainized and tubes 8x12 cm. long and 4 to 20 mm. in diameter are introduced. During the operation the patient should be placed on a table with head lowered. This position brings into view the roof of the pharynx, the superior portion of the choanae, and permits of easy access to the accessory sinuses. Ed.

376

Operation for the Reduction of Redundant Alar Cartilages. J. Leshure.

Original contribution to The Laryngoscope, p. 1007, Aug., 1912.

378

Suturing as a Substitute for Splints After the Submucous Resection of the Nasal Septum. O. A. Lothrop, *Boston Med. and Surg. Jour.*, p. 483, March 28, 1912.

Abstracted in The Laryngoscope, p. 1350, Dec. 1912.

386

Treatment of Nasal Synechia. E. J. Moure, *Rev. Hebd. de Laryngol.*, Oct. 26, 1912.

Moure speaks of the method introduced by Scheppegrell and Garel of using thin plates of celluloid for separating the exposed tissues after removal of the synechia. He prefers mica as it may be obtained in very thin layers, adapts itself to the curves of the nasal cavity and is nonabsorbent. He has had good results from its use. Scheppegrell.

392

Phlegmon of Left Orbit Following Injection of Paraffin in Right Nasal Fossa. Pistre, *Rev. hebd. de Laryngol.*, p. 641, June 1, 1912.

Abstracted in The Laryngoscope, p. 198, March, 1913.

394

Effect of Sacacornin in Nasal Hemorrhage. V. Pospischil, *Casopis lekaruv ceských*, No. 34, 1912.

The author discusses the causes and clinical data concerning epistaxis. Sacacornin has proved effective in checking hemorrhage even in postoperative cases and is preferred by the author. In patients subject to nasal hemorrhage it should be employed as a preventative measure. Ed.

395

Auricle to Substitute Defect in Nostril. A Reich, *Zntrlbl. f. Chir.*, p. 1537, Nov. 9, 1912.

This transplantation was performed in the case of a man of 38 years suffering from a rapidly spreading carcinoma of the left nostril. Reich used a modification of the Koenig method and describes his technic. Ed.

404

Mechancial Means to Arrest Epistaxis. Ritschl, *Muench. med. Wchnschr.*, Oct. 22, 1912.

Ritschl endorses Negeli's method of stopping epistaxis. The patient sits in a chair and the physician standing behind places his hand under the patient's lower jaw and occiput and pulls the head firmly upward. If the upward traction is accompanied by a maximum flexion of the head backward the effect is increased. Hemostasis results in one or two minutes. Ed.

412

Useful Procedure in Submucous Resection of the Nasal Septum. F. C. SMITH, *Jour. A. M. A.*, p. 197, July 20, 1912.

The advantages of using the electro-cautery in incision for resection of the nasal septum are in Smith's opinion: 1. A greater degree of antisepsis. 2. No bleeding during this step of the operation and less subsequent bleeding. 3. No doubt in the operator's mind as to when his electric cautery is carried deep enough since it meets distinct resistance on reaching the cartilage. It should not be allowed to remain here too long so as to puncture the cartilage. 4. From the seared edges of the incision the mucous membrane as well as the perichondrium recede slightly so that their elevation is easily and quickly accomplished. He adds that primary union, as we see it in the nose, is apparently not retarded. ED.

417

Direct Examination of the Naso-pharynx and Eustachian Tube. VON GYERGYAI, *Ztschr. f. Laryngol.*, p. 57, Bd. 5, Heft 1, 1912.

Abstracted in THE LARYNGOSCOPE, p. 964, July, 1912.

421

Technic of Intra-nasal Operations Upon the Lacrimal Apparatus. S. YANKAUER.

Original contribution to THE LARYNGOSCOPE, p. 1331, Dec., 1912.

422

Ultra-violet Rays in Measuring Olfaction. H. ZWAARDEMAKER, *Monatschr. f. Ohrenh.*, p. 672, Bd. 46, Heft 5, 1912.

Zwaardemaker conducts the ultra-violet rays to olfactometer and brings them in contact with the volatile substance for olfactory tests. He depends on oxidation, synthesis and polymerisation of these substances by the violet rays for increased efficiency and intensity in the use of the olfactometer. GOLDSTEIN.

424

Cleft Palate. T. W. BROPHY, *Lancet Clin.*, April 20, 1912.

Before undertaking operation for cleft palate, Brophy removes all adenoids and hypertrophied tonsillar tissues, and allows the parts to heal thoroughly.

The operation for complete cleft with single harelip is done in three stages. Within the first three months, the bones are closed; in about four to eight weeks the lip is closed; then after several months the soft parts are closed. No absorbent materials should be used, only silver wire, lead plates and horse hair.

Brophy denies that congenital cleft palate is the result of arrested growth or absence of palatine tissue, but feels that heredity, pressure in embryonal life and supernumerary teeth are the predisposing causes.

ED.

428

Cleft Palate With Special Reference to the Closing of a Surgical Cleft by the Use of a Dental Appliance. H. S. HASLETT, *Jour. A. M. A.*, Aug., 10, 1912, p. 425.

The author feels that success in the treatment of such cases depends upon the attention and care with which the case is handled and the care and skill with which the proper appliance is constructed. In cases of congenital cleft the patients have difficulty in at first accustoming themselves to the change but with proper instruction and perseverance such proficiency in speaking is acquired that often the deformity is not suspected. ED.

429

Three Cases of Cleft Palate and Hare-Lip In One Family. A. T. HAWES, *N. Y. Med. Jour.*, Jan. 27, 1912.

After the birth of one child with hare-lip and cleft palate, the woman had two normal children. Subsequently she gave birth to twins in both of whom this deformity was present. The cause could hardly be one that affected the placenta unless both were affected, for the twins were attached to two separate placentae. Prenatal influence—such as worry—could hardly have been a factor, for it was only during the second pregnancy that the mother worried, and nevertheless she gave birth to a normal child. There was a history of the deformity in the paternal uncle. ED.

433

Case of Atresia of the Palate and Rhino-Pharynx. R. C. MYLES, *Proc. N. Y. Acad. of Med.*, Oct. 23, 1912.

Abstracted in THE LARYNGOSCOPE, p. 145, Feb., 1913.

447

Sarcoma of the Tonsil. G BERRY, *Boston Med. and Surg. Jour.*, March 7, 1912.

Abstracted in THE LARYNGOSCOPE, p. 20, Jan., 1913.

452

Physiology of Palatal Tonsils. C. CALDERA, *Intern. Zntrlbl. f. Ohrenh.*, Vol. 10, No. 10, p. 417, 1912.

This article is a historical review of the various hypotheses concerning the physiology of the palatal tonsils since 1883. ED.

456

Tonsillar Hemorrhage, Causes, Prevention and Treatment. G. H. COCKS, *Med. Rec.*, June 1, 1912, p. 1033.

Abstracted in THE LARYNGOSCOPE, p. 1141, Sept., 1912.

460

Bacteriology and Pathology of the Tonsils With Especial Reference to Chronic Articular, Renal and Cardiac Lesions. D. J. DAVIS, *Jour. Infec. Dis.*, March, 1912.

In a series of cases including chronic articular, renal and cardiac affections, and chronic tonsillitis, the crypts of the extirpated tonsils generally revealed the hemolytic streptococcus as the predominating organism and in some cases in practically pure growth.

A few exceptions were noted, especially in endocarditis, in which a pneumococcus-like organism was predominant.

The hemolytic streptococci are virulent for rabbits and other animals, invariably localizing in or about the joints and producing multiple arthritis. It only occasionally localizes on the heart valves. The pneumococci rarely produce arthritis but frequently localize on the heart valves.

The multiple arthritis in animals may become chronic, lasting for months. The exudate is mucoid early, later becoming purulent; usually it contains streptococci though in a few instances it was sterile.

The streptococci isolated from the various clinical groups of cases are alike in their morphology, their reactions in media including sugars, and also in their pathogeneity for animals.

The bacterial flora of the surface of the tonsils as revealed by a study of these chronic cases is usually strikingly different from the flora of the crypts. They may occasionally be similar but usually they are not. Subcultures as ordinarily made from the surface of the tonsils, especially in chronic infections, are quite unreliable for determining the crypt flora.

The crypts of enlarged tonsils in nearly all cases contain large numbers of virulent streptococci and these cases may therefore be considered as streptococcus carriers. HALSTED.

461

On Plasma Cells in the Tonsils. D. J. DAVIS, *Jour. of Inf. Dis.*, March, 1912.

The origin of plasma cells has been a much disputed question. Unna thought they came from the connective tissue cells. While this idea is still supported by a few observers, most recent workers now consider them as derived from the small lymphocytes. In the tonsils of the fetus and the newborn, plasma cells are not present. They first appear about the second or third week, and thereafter are constantly found in the tonsils. This is about the time, or shortly after the time, that bacteria invade the tonsillar crypts. In hypertrophied tonsils they are more numerous than in apparently normal tonsils. Their presence may be interpreted as indicating the existence in the tonsils of a chronic infectious process or the absorption of toxic or irritating products. As to their distribution in the tonsil, they occur chiefly in three localities—they are most numerous just beneath the epithelium, especially that lining the crypts, are found abundantly along and in the meshes of connective tissue that surrounds and penetrates the tonsil, and often, but by no means always, may be seen clustered about the smaller blood vessels at various depths in the lymphoid tissue. HALSTED.

463

Enucleation of the Faucial Tonsil With the Guillotine. J. K. MILNE DICKIE, *Edin. Med. Jour.*, Sept., 1912.

The author refers to the methods of Sluder and of Whillis and Pybus. He has adopted the latter with a slight modification, and finding it very satisfactory, strongly advocates its more general adoption. The only cases which he does not find suitable are those of adults who have had repeated peritonsillar abscesses. In these he prefers enucleation by dissection. He gives the results of the first 50 cases in which he employed the method under discussion. GUTHRIE.

464

Functions of the Tonsils and Appendix. K. H. DIGBY, *Lancet*, Jan. 20, 1912.

The lymphatic structures whose antibacterial activity Digby considers, have not thus far been commonly recognized by others to possess this quality. They lie close to the body and may be called the sub-epithelial lymphatic glands; they embrace the tonsils, the solitary follicles of the intestine, Peyer's patches and the vermiform appendix. By a process of continual auto-vaccination, these structures protect the body against chance infection. By chemotaxis all bacteria in the vicinity are attracted through the overlying epithelium into the lymph nodule. The bacterial attack invited into the region most favorable to the defensive mechanisms of body is nearly always repulsed. Lympho-cytosis takes place and a great excess of specific bacteriolysins and antitoxins are also produced which enter the general system and combat the attack at a more vulnerable part. Thus immunity against a disease is acquired without the individual having apparently had the disease. ED.

466

Operation of Tonsillectomy. H. V. DUTROW.

Original contribution to THE LARYNGOSCOPE, p. 753, May, 1912.

468

Tonsils in Nephritis. EPPINGER, *Wr. med. Wchnschr.*, No. 24, 1912.

In three obstinate cases of nephritis following angina all signs of the nephritis ceased after tonsillectomy. With the exception of being a little swollen the tonsils had appeared normal but upon excision were found to be filled with small collections of foul-smelling pus containing streptococci. ED.

469

Polypoid Hypertrophy of the Lingual Tonsils. FALLAS AND STEINHAUS, *Jour. med. de Brux.*, No. 10, 1912.

When this tumor was removed from the man, aged 60 years, it was found to be pedunculated and not extending into the depth of the tissue. Microscopic examination revealed a structure similar to that of the lingual tonsil except that the infiltration consisted mostly of plasma cells. ED.

472

Anatomy and Relations of the Tonsil in the Hardened Body. G. FETTEROLF, *Am. Jour. Med. Sci.*, p. 37, July, 1912.

From an anatomical and clinical point of view the plica triangularis is more than a fold of mucous membrane; it may be defined as that portion of the tonsillar capsule extending inward and posterior to the palatal arch. In enucleation the separator should not be introduced behind the palatal arch and plica, for this results in an intra-capsular operation and a rather thick layer of tonsiliar tissue remains around the capsule.

If the operation is to be thorough the anterior portion of the plica should be the part first attacked by the enucleating instrument. Fetterolf uses only local anesthesia. Ed.

474

Unusual Tumor of the Fauces. E. E. Foster, *Boston Med. and Surg. Jour.*, Jan. 8, 1912.

In the case of a woman of 60 a slowly growing tumor was removed from the region of the right tonsil. The tumor was found to be a colloid carcinoma similar to those seen in the parotid gland. The symptoms were those of a peri-tonsillar abscess without signs of inflammation. Ed.

482

Cavernous Lymph-angioma of the Tonsil. Goris, *Jour med. de Brux.*, No. 6, 1912.

Cavernous lymph-angioma, in the center of which there was seen a small stone which the author felt was the site of origin of the tumor

Ed.

486

Faucial Tonsil; Anatomical Reasons for its Capacity for Evil and Some Indications for its Removal. W. G. Harrison, *South. Med. Jour.*, Jan., 1912.

From an anatomical consideration of the tonsil Harrison points out its possible capacity for evil. "One of the most important factors operating to lower the resistive power of the cryptal epithelium is the fact that a number of crypts open directly upward and gravity opposes their natural drainage; again, they are sometimes prevented from draining by folds of mucuous membrane passing from the anterior to the posterior pillars; thus occluding the natural openings of the crypts."

The author argues that the removal of the tonsil produces no injurious effects, while the diseased organ may be the cause of rheumatism, chronic hypertrophic or recurring cryptal tonsillitis, peri-tonsillar abscess, aural catarrh, chronic laryngitis, pains and soreness in neck, neuralgia, hoarseness, loss of voice, etc., aneurysm, appendicitis, meningitis, iritis, pleuritis, pericarditis, endo-carditis, pneumonia, paraplegia, nephritis, osteomyeletis, orchitis, general sepsis, skin eruptions, tuberculosis, various pyogenic infections, chronic urethritis and chronic ureteritis. Ed.

494

Diseased Tonsillar Crypts and Their Treatment. J. H. Johnson, *Intern. Jour. of Surg.*, Jan., 1912.

In the acute stage the crypt is filled with white, grey or yellowish masses composed of epithelium, food particles, bacteria and lymph. The chronic stage is characterized by foul-smelling breath, sore throat, coughing up of cheesy plugs, etc. Occasionally the fauces and throat are involved, with pneumonia as a complication. Naso-pharyngeal and sinus disease may also arise. In cases of tubercular tonsillitis the infection may be carried by the lymph and blood and cause miliary or apical tuberculosis. Treatment is both medical and surgical; the plugs may be squeezed or curetted, or the tonsils may be removed as indicated by the individual cases. Ed.

495

Lingual Tonsils in Health and Disease. John H. Johnson, *Jour. Ophth. and Oto-Laryngol.*, p. 362, Nov., 1912.

The author summarizes his ideas as follows: (1) That the lingual tonsils are glandular organs and secrete lymphocytes; that they lubricate and normally are protective organs. (2) That the simpler throat affections require the vital organs to be carefully guarded. (3) The glosso-epiglottic space is a frequent site for the cause of extra-pulmonary cough. (4) Numerous reflexes result from diseased lingual glands. (5) These glands when diseased may cease to be protective and instead become infective and should be removed. Stein.

498

Death Immediately After Removal of Adenoids and Tonsils in Out-patient. Kafeman, *Med. Klinik.*, p. 1421, Sept. 1, 1912.

Boy of 14 with large tonsils and adenoids. Since general anesthesia had to be employed, mother was warned to give him light breakfast on day of operation, but disobeyed. He vomited profusely and could not be aroused after the operation. This case teaches that the patient should be in the hospital a day or two before the administration of general anesthesia and that before such administration we should determine by local anesthesia whether there are any enlarged lymph-nodes in the thorax. In this case the thymus weighed 40.5 gm., the lymph-nodes were much enlarged and the heart large and flabby. Ed.

499

Infections Following Tonsillotomy With a Consideration of the Forms of Such Infections. H. Koplik, *Am. Jour. Med. Sci.*, p. 30, July, 1912.

Koplik calls attention to three types of infection following tonsillotomy: (1) On third or fourth day following operation fever appears which lasts a week or more and ends without causing any aural or endocardiac lesions. (2) High fever lasting for weeks with cardiac involvement and in some instances development of fatal septic endo-carditis. (3) Hematogenous infection causing destructive blood changes with signs of sepsis (hemorrhagic ecchymotic areas on skin, petechiae, hemorrhage from bowel, areas of broncho-pneumonia. One case falling under class 3 is reported, which recovered after a transfusion. Ed.

502

Case of Sarcoma with Positive Wassermann. E. Lautenschlaeger, *Arch. f. Laryngol. u. Rhinol.*, Bd. 26, Heft 2, p. 421, 1912.

Girl of 25 given salvarsan because of positive Wassermann. Ulceration of tonsil cleared up, but in spite of repeated injection recurrence, which showed typical polymorphonuclear-celled sarcoma-tissue. Radical operation; no recurrence; Wassermann negative. Ed.

505

Discovery of Fuchsinophiles Cells in the Human Pharyngeal Tonsils. L. LETO, *Arch. ital. di Laringol.*, July, 1912, p. 104.

The cells described by Leto are similar to those which Schridde found in the thymus gland; their origin is not known, but they may develop from the perivascular tissue. Their purpose is not known but the author feels that they have a secretive function. ED.

507

Complications After Operations on the Tonsils. LEWY, *Ztschr. f. Laryngol. Rhinol. u. ihre Grenzgeb.*, Bd. 5, Heft 2, 1912, p. 247.

Abstracted in THE LARYNGOSCOPE, p. 1310, Nov., 1912.

508

Massacre of the Tonsil. J. N. MACKENZIE, *Md. Med. Jour.*, June and Sept., 1912; *Ann. f. Otol.*, June, 1912; *Can. Lancet*, Oct., 1912; and *Arch. intern. de Laryngol.*, Nov.-Dec., 1912.

Mackenzie pleads for greater conservatism in dealing with tonsils. He feels that it serves a teleologic rather than a pathologic purpose and that it has a definite, good purpose to serve. He admits that some conditions call for tonsillectomy but the tonsils should never be removed before it has been definitely determined that they are the cause of the disorder. Mackenzie points out that the harm of the present hasty removal of tonsils may only become evident after years. ED.

510

Malignant Tumors of the Tonsil. J. MATHEWS.

Original contribution to THE LARYNGOSCOPE, p. 737, May, 1912.

514

Three Cases of Acute Follicular Tonsillitis With Unusual Sequela. S. MCCULLAGH.

Original contribution to THE LARYNGOSCOPE, p. 1203, Oct., 1912.

516

Nevus of the Tonsil. J. A. MULHOLLAND, *Proc. N. Y. Acad. of Med.*, April 24, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1153, Sept., 1912.

519

A Few Anatomical and Surgical Considerations of the Tonsil. J. J. PATTEE, *Colo. Med.*, Feb., 1912.

This is an address to the Pueblo County Medical Society. Pattee warns the general practitioner not to lance a child's tonsil; nor to lance peritonsillitis before the fifth to seventh day. The fear about cutting the carotid in removing or lancing tonsils is unwarranted. The physiology of the tonsil is not known but its removal has done no harm. Pathological tonsils should be entirely removed. Five to six per cent of tonsils are tubercular; separate patches on mucous membrane points to diphtheria. Twenty to thirty per cent of children have hypertrophied or pathological tonsils and adenoid tissue. Cervical adenitis is usually secondary to tonsillitis. The welfare of the ear often demands the removal of tonsils. ED.

520

Results of Enucleation of the Faucial Tonsils. J. H. H. PEARSON, *Jour. of Laryngol. Rhinol. and Otol.*, p. 244, May, 1912.

The author reports on 53 cases in the majority of which tonsillar enucleation resulted in an improvement in the singing voice. Healing takes place by flattening out both faucial pillars against the lateral pharyngeal wall, with obliteration of the tonsillar fossa; by fusion of the two pillars, thus obliterating the tonsillar fossa; by retention of both pillars and fossa during recovery. ED.

529

Aneurysm of the Internal Carotid Simulating Suppurative Tonsillitis. RANMOS, *Arch. Brasileiros de Med.*, Jan., 1912.

Woman of 39 showed signs of suppurative tonsillitis but upon close examination an aneurysm of the left internal carotid was found. The carotid was tied and the patient recovered. Verneuil had already called attention to the possibility of an incorrect diagnosis in such cases. ED.

537

Post-operative Tonsillar Hemorrhage. J. E. SAWTELL, *Jour. of Ophth. and Oto-Laryngol.*, p. 192, June, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1189, Oct., 1912.

538

The Tonsils and the General Health. W. SCHEPPEGRELL, *New Orleans Med. and Surg. Jour.*, July 19, 1912.

Among the cases described, Scheppegrell reports an unusual case of abscessed tonsil. The patient, a young woman of 28, had been suffering for six months from anemia, general depression and light elevation of temperature, the condition generally indicating incipient tuberculosis, but the most careful examination failing to reveal any pulmonary disease. As the patient complained of cheesy deposits in the tonsils, and all other treatment being without benefit, the family physician referred the case to Scheppegrell. The tonsils were found without signs of hypertrophy, but there were several crypts on each side which were filled with caseous debris, the occasional discharge of which annoyed the patient. Clinically, the patient presented a common form of the tonsils with diseased crypts.

Believing that the absorption from these caseous masses might have a depressing influence in this case, and as the patient was annoyed by the cheesy excretions, tonsillectomy was advised. While removing the left tonsil under general anesthesia, the knife entered a pus cavity just within the capsule, and about a dram of thick, grey pus was discharged into the throat. The patient made a good recovery, with no further recurrence of fever, and at once improved in weight.

Attention is called to the fact that, while this was a cold abscess of the tonsil which gave rise to no pain whatsoever and no appearance of being otherwise than an ordinary case of tonsil with caseous crypts, such a tonsil is a constant menace to the health and could at any time infect other organs or the entire system. A. A.

548

Some Untoward After-effects of Too Radical Tonsillectomy. J. A. STUCKY. Original contribution to THE LARYNGOSCOPE, p. 1201, Oct., 1912.

549

General Infection Following Acute Tonsillitis. WM. J. TAYLOR, *Ann. of Surg.*, p. 785, June, 1912.

Taylor reports four cases of great interest: (1) A man who had bilateral ankylosis of the elbows. (2) A child who developed an epiphysitis of the left femur and was left with a permanently damaged hip-joint. (3) A woman who following amputation of the uvula developed a streptococcic throat infection, followed in forty-eight hours by abscess of the right ovary and tube, with general septic peritonitis and death. (4) A woman, who following a streptococcic tonsillitis, developed a purulent cellulitis of her leg. PACKARD.

550

Cartilage and Bone in the Palatal Tonsils. E. THEODORE, *Arch. f. Ohrenh.*, Bd. 90, Heft 1-2, p. 34, 1912.

This case is very unusual and is the first the author has observed. The patient was a woman who complained for some time of lancinating pains in the region of the neck and whose right tonsil was very large: enucleation under total anesthesia, inferior pillar showed the presence of a dry body which could only be a bony fragment. Microscopic examination showed the presence of osseous and cartilaginous islets.

Viewed from an embryologic study the author concludes that this disorder is due to faulty development in the twelfth branchial arc which protruded small fragments of cartilage into the depths of the tonsils. This cartilage was then transformed into bone without osteoblasts. ED.

556

The Tonsil in Childhood. J. GORDON WILSON, *Am. Jour. of Dis. of Children*, May, 1912.

An abstract of this article cannot do it justice but should be read in the original, both by the pediatrist, before whom it was originally read as well as by every laryngologist, as the viewpoint and Wilson's own investigation will be found to be of the greatest value. Dr. Wilson after discussing the anatomic and the physiologic data gave the following resume: (1) It would appear that intimate relationship with the pharynx is a necessity to tonsillar activity. (2) Tonsillar activity is to be regarded as most active during developmental life. (3) The tonsil cannot be regarded as merely a lymph node. (4) There is every reason to believe that the tonsils play an important role in the complex changes which occur at the upper end of the digestive tract. The life-history of the tonsil is divided into two periods: (a) Before puberty—period of functional activity. (b) After puberty—when it persists chiefly as an aggregate of lymph-nodes which tend to atrophy. Also all agree that if the tonsil be diseased, it should be removed; but it is sometimes not so simple a matter to recognize a tonsil which demands removal because of disease. In childhood it may be necessary to consider whether there is here a hyper-functionating or a hypo-functionating organ. Many large tonsils differ little from normal, but many macroscopically small, are found microscopically to contain foci of infection. His attitude in regard to the etiological relation of the tonsil to endocarditis and rheumatism is that, if the tonsil is subject to recurring attacks of inflammation, it is not alone the tonsil that is vulnerable. Primary tuberculous disease of the tonsil is rare; disease foci secondary to pulmonary disease is not uncommon. The small hypo-functionating tonsils are the ones usually involved.

It is an everyday experience that enlarged lymph-nodes are often associated with tonsillar disease, and the removal of this focus of disease frequently cause the glands to reduce in size. This rapid disappearance after removal of tonsils appears to speak against their tuberculous nature.

Whenever from unhygienic surroundings or mode of life, it may be also from constitutional weakness, the upper respiratory and alimentary tracts are exposed to influences which lower their vitality, and when the mucous surface particularly absorbent in the child, are exposed to irritation, the tonsil suffers for and with them. The tonsil in a child protects these tracts, especially where the two come together in the naso-pharynx and is associated with its well-being. If this be so, one is called to do everything to protect these bodies during the period of functional activity. Further one is called to remove them when one is convinced that on account of disease or loss of function they are not only a source of infection, but have an injurious effect on the structures around. HALSTED.

557

Chancre of the Tonsil. N. L. WILSON.

Original contribution to THE LARYNGOSCOPE, p. 1110, Sept., 1912.

558

Outbreak of Tonsillitis or Septic Sore Throat in Eastern Massachusetts and Its Relation to an Infected Milk Supply. E. A. WINSLOW, *Jour. of Infec. Dis.*, Jan., 1912.

This disease was not an ordinary follicular tonsillitis but more nearly whåt the English recognize as septic sore throat. In early stages there was merely a diffuse redness over the tonsils and the adjoining region, but follicular patches often appeared later and in many cases a membrane simulating that of diphtheria.

Peritonsillar abscesses and enlarged cervical glands of a stubborn nature marked the second stage of the disease, and these were followed by diverse complications; rheumatism, erysipelas, nephritis, pericarditis and general septic condition.

The Boston epidemic affected the Back Bay and other regions, the town of Brookline, and the City of Cambridge between May 8 and May 22. Record of 1043 cases were examined. Cases were concentrated in families. Females suffer worse than males. Adults suffer more in proportion.

Forty-eight deaths were attributed to the epidemic, two-thirds of these were above 55 years and one-third over 75.

It was shown that the epidemic exactly coincided with one of the two main milk supplies of the Deerfoot Co. It affected the particular districts of Boston, Brookline, and Cambridge, where the milk from this station was used, and it broke out simultaneously in Marlboro and Southboro, the only other town to which this milk was distributed. HALSTED.

563

Systemic Infection Through the Pharyngeal Lymphoid Ring Calling for Surgical Intervention. C. B. WYLIE, *Jour. Ophth. and Oto-Laryngol.*, Aug., 1912; and *L'ville Monthly Jour. of Med. and Surg.*, Oct., 1912.

Abstracted in THE LARYNGOSCOPE, p. 1231, Oct., 1912.

565

Apoplexia Uvulae. GIBERT, *Jour. de Physique med. appliquee*, May, 1912.

Official, aged 54. A few years ago slight congestion of liver and slight dyspepsia. Since several days pains on swallowing and dryness in mouth. Upon looking into his mouth he saw a round, dark mass about 3 cm. long. The doctor who was summoned punctured to mass, whereupon a thick fluid escaped. After application of hydrogen peroxid the uvula resumed its former appearance, only it was covered with a shrivelled epithelial layer. ED.

567

Circumcision of the Uvula. H. HAYS.

Original contribution to THE LARYNGOSCOPE, p. 965, July, 1912.

568

Unusual Case of Elongated Uvula. C. W. KOLLOCK.

Original contribution to THE LARYNGOSCOPE, p. 970, Sept., 1912.

573

Rare Tumor of the Tongue. BROECKAERT, *Ann. de la Soc. Belge de Chir.*, Jan. 24, 1912.

Plexiform alveolar tumor, epithelial, not of endothelial origin—an adenosarcoma. ED.

574

Black Hairy Tongue (Lingua Villosa Nigra); Report of Two Cases. W. W. CARTER.

Original contribution to THE LARYNGOSCOPE, p. 1026, Aug., 1912.

589

On Dermoids of the Tongue. R. OLLERENSHAW, *Brit. Med. Jour.*, p. 1290, June 8, 1912.

After some introductory remarks on such cysts in general, Ollerenshaw reports the history of one of his cases. The patient was a boy of 13 years. When 14 days old he was taken to a doctor because of difficulty in suckling. A small "lump," pea-sized, was discovered in the floor of the mouth. This lump grew slowly until the twelfth year, when its increase in size made closing of the mouth impossible. Only liquid food could be taken; dysphagia. The cyst was removed through the mouth under general anesthesia. It was one and a half times the size of a golf ball. Recovery. ED.

599

Multiple Hereditary Telangiectasis of Tongue, Turbinates and Septum with Recurring Hemorrhage. C. D. VAN WAGENEN, *Med. Rec.*, Jan. 20, 1912.

The two brothers had had frequent nasal hemorrhages, not due to a hemophilic disposition but to a dilation of the vessels with weakening of walls and atrophy of the mucosa. The hemorrhage was checked with thrombokinase. ED.

600

Tuberculosis of the Tongue. S. VON RUCK.

Original contribution to THE LARYNGOSCOPE, p. 1190, Oct., 1912.

609

Pharyngeal Suppuration; Course and Direction of Various Types. G. W. BADGEROW, *Lancet*, March 23, 1912.

According to the seat of origin Badgerow differentiates four types of pharyngeal suppuration: (1) Lymphoid suppuration, the most common form, in which no great amount of pus is present in this layer of tissue. In lacunar tonsillitis the pus is limited to the crypts. (2) Submucous suppuration (peritonsillar abscess) whose chief symptom is dysphagia. (3) Subaponeurotic suppuration, which includes abscess arising in deep cervical glands and presenting on the posterior pharynx, and also angina Ludovici. (4) Prevertebral suppuration which the general practitioner always associates with retro-pharyngeal abscess. ED.

611

Enormous Parotid Tumor in a Chinese Woman. H. BALME, *Brit. Med. Jour.*, p. 1292, June 8, 1912.

Woman of 53 presented tumor extending from malar bone to the level of the breast, and from the middle of the chin to some distance beyond the posterior border of the sterno-mastoid muscle. It was firmly attached to the structures in the parotid region. Its circumference was larger than the patient's head. After improving the woman's general health and breaking her of the opium habit the growth (myxo-endothelioma) was removed. It weighed over 20 oz. Recovery uneventful. ED.

619

Case of Angioma Cavernosum of the Posterior Pharyngeal Wall. A. BLAU, *Arch. f. Laryngol. u. Rhinol.*, Vol. 26, Heft 1, p. 270, 1912.

Blau describes his case and appends illustrations. It was successfully treated with electrolysis. ED.

622

Case of Hematoma of the Pharyngeal Wall. E. BOTELLA, *Arch. intern. de Laryngol. d'Otol. et de Rhinol.*, p. 465, Sept.-Oct., 1912.

Case was in a girl of 26 years. The growth was at first thought to be a tuberculoma. It disappeared after three applications of the galvanocautery and cure resulted. ED.

625

Epithelioma of the Pharynx. J. Price-Brown, *Can. Med. Assn. Jour.*, March, 1912.

The history of the case dated back some six months, and the patient, aged 72, presented a large growth filling the left side of the pharynx, including part of the soft palate, the whole of the tonsil, both faucial pillars, the side of the tongue, and had also an attachment to the post-pharyngeal wall. The common carotid was ligature, and the growth dissected out *per oram* with a long curved bistoury and the bases burned deeply with the electro-cautery. The latter procedure was repeated at intervals for ten days, when the general and local conditions were entirely satisfactory. The patient was still under observation in the hospital at the time of making the report. Wishart.

628

Chicago Epidemic of Streptococcus Sore Throat and Its Relation to the Milk Supply. J. A. Capps and J. L. Miller, *Jour. A. M. A.*, p. 1848, June 15, 1912; and p. 1715, Nov. 9, 1912.

By a conservative estimation it is said that 10,000 persons in Chicago were victims of this epidemic of sore throat. The majority of the cases were among users of milk collected in Batavia, where an epidemic of mastitis had been prevalent among 4-6 per cent of the cows, and an epidemic of sore throat among the farmers and milkers at the same dairy. The authors feel that the only remedy is more careful inspection of cows and milkers and especially efficient pasteurization by the holding method.

Ed.

633

Case of Vincent's Angina. G. Cocks, *Proc. N. Y. Acad. of Med.*, Jan. 24, 1912.

Abstracted in The Laryngoscope, p. 107, Aug., 1912.

642

What is Being Done Outside of the Dental Office for the Improvement of the Human Mouth. A. Day, *Public Health Jour.*, May, 1912.

This is a most interesting account of the "Great Oral Hygienic Movement," which is now making headway not only upon this continent, but throughout Northern Europe and Japan. He points out the important fact that statistics show that forty per cent of the absence from school is caused by improper oral condiions, and that examinations have shown that ninety-seven per cent of the mouths of school children need dental attention. Last year in New York City, seventy thousand school children failed, and had to take their year over again, which cost the city three million dollars. The leading part taken by the dental associations in educating public opinion to the monetary value of municipal care of the teeth of school children is briefly sketched, and the condition in Canada outlined. Wishart.

645

Gout of the Salivary Glands. E. Deglos, *Presse Med.*, Feb. 10, 1912.

Abstracted in The Laryngoscope, p. 154, Feb., 1913.

662

Angioma of the Pharynx, Larynx and Neck. A. FALLAS, *Arch. intern. de Laryngol.*, p. 90, Jan.-Feb., 1912; and *La Clin.*, April, 1912.

No operation was performed since the patient did not suffer from hemorrhage nor from any other disturbance. He rehearses the various possible operative procedures. Mahu has obtained good results in such cases with injections of hydrogen peroxid. The best therapy is electrolysis but it is slow in effect. Radium is also of avail. ED.

670

Case of Specific Glossitis. W. FREUDENTHAL, *Trans. N. Y. Acad. of Med.*, Nov. 27, 1912.

Abstracted in THE LARYNGOSCOPE, p. 231, March, 1913.

673

Hemorrhage from the Throat. A. C. GETCHELL, *Boston Med. and Surg. Jour.*, Jan. 18, 1912.

The spitting of a teaspoonful or more of blood is due to pulmonary tuberculosis, unless one has direct visual evidence that the blood comes from the throat. ED.

674

Chronic Oral Infection. T. L. GILMER, *Ill. Med. Jour.*, March, 1912, and *Arch of Int. Med.*, April, 1912.

Few mouths are free from lesions and therefore form an excellent soil for the gathering and spreading of bacteria. Especially is this true of mouth breathers. From thence they spread to the cervical and submaxillary lymph-glands, causing Ludwig's angina, pharyngites, tonsillites, etc. The tubercle bacilla, too, if often present in the mouths of non-tuberculous individuals. ED.

687

Vincent's Angina; Its Frequency and Importance of Its Recognition. T. H. HALSTED.

Original contribution to THE LARYNGOSCOPE, p. 1372, Dec., 1912.

700

Relation of Anti-Tuberculosis Movement to the Dental Movement. S. IGLAUER, *Lancet Clin.*, p. 633, June 8, 1912.

Both the dental and anti-tuberculosis movement are phases of preventive medicine and both owe their existence to the discovery of the germ which causes the respective disorders. ED.

701

Peculiar Case of Carcinoma of the Pharynx. R. IMHOFER, *Prag. med. Wchnschr.*, March 21, 1912.

Abstracted in THE LARYNGOSCOPE, p. 111, Feb., 1913.

704

Leucoplakia Buccalis. R. H. IVY, *N. Y. Med. Jour.*, p. 744, April 13, 1912.

Three cases are reported. Ivy feels that there was present neither syphilis nor malignant disease. Tobacco and alcohol are held to play a considerable role in the genesis and progress of this affection. ED.

708

Stomatitis Due to the Gonococcus. C. Jourdan, *Arch. Intern. de Laryngol.*, Jan., Feb., 1912, p. 65; and *Clinique*, Aug. 12, 1912.

Jourdan believes in the existence of this condition, basing his conclusion on observations on two cases. The gonococcus Neisseri can exist and grow in the mouth, originating either from coitus ab ore or resulting from a long standing urethritis gonococcica. In this condition the same treatment is indicated as in the presence of the bacilli in other parts of the body.

717

Vincent's Fusiform Bacillus; Experimental Researches. F. Lasagna. Original contribution to The Laryngoscope, p. 1009, Aug., 1912.

723

Microscopic Examination in Pemphigus Chronicus. Lipschuetz, *Arch. f. Dermatol.*, Bd. 111, 1912.

In 4 of 11 cases examined in which the mucosa of the lips, cheeks, soft and hard palates was involved, no mention is made of laryngeal or nasal symptoms. Ed.

729

Sore Throats With Complications. S. H. Lutz, *L. I. Med. Jour.*, Oct., 1912.

Several cases of sore throat complicated with otitis are reported, and a number of cases of sore throat occurring within ten days in a private school due to the milk supply. Ed.

730

Report of a Case of Infected Dentigerous Cyst. G. W. Mackenzie, *Jour. of Ophth., Otol. and Laryngol.*, p. 221, June, 1912.

Mackenzie reports a case in which the dentigerous cyst was sterile for over two years and only caused pain when it became secondarily infected with pathogenic micro-organisms. It was successfully removed and the patient made an uneventful recovery. The author also discusses the origin of cysts. Ed.

731

Paths of Rheumatic Infection and Their Protection in Children. J. R. Mackenzie, *Brit. Med. Jour.*, June 1, 1912, p. 1232.

The infection may be localized in the throat, bronchial tubes or unhealthy intestinal tract; the micrococcus makes inroads if the physical resistance, the protective properties of the local tissue or the defensive agencies of the blood are sub-normal. In a child of a rheumatic family congestion of the pharynx, palate and fauces should always receive immediate attention; salicylic acid preparations, with sodium bicarbonate, sodium salicylate, potassium chlorate and aperients is effective. The hygiene of the mouth should also receive careful attention. Ed.

733

Form of Subjective Disturbance of the Pharynx. Mancioli, *Policlin. seg prat.*, Nov. 24, 1912.

The cases reported are in adults who, after a rheumatic attack, feel as if a foreign body were perforating one of the pharyngeal walls. Sometimes the pain is so intense that the patient commits suicide. At times no symptoms can be seen, while occasionally severe ectasia of the veins in the floor of the tongue and in the posterior palatal arch is noticed. In some cases these varices are due to hypertrophy of the thyroid gland, in others to a disturbance of the venous circulation. Cauterizing the varices greatly relieves the condition. Ed.

741

Pharyngeal Insufflation; A Simple Method of Artificial Respiration. S. J. Meltzer, *Jour. A. M. A.*, p. 1413, May 11, 1912.

This method consists of: (1) the introduction of the catheter into the pharynx; (2) pulling out the tongue; (3) pressing the suprahyoid region against the roof of the mouth; (4) putting the abdomen under constant pressure, and (5) connecting the catheter with a bellows. When air is thus introduced into the pharynx its escape otherwise than into the lungs is hindered by pressure in the suprahyoid region and by the abdominal compression. He has experimented on four species of animals, dogs, cats, rabbits and monkeys, chiefly on the first two, and found it efficient in keeping up the life of perfectly curarized animals for many hours in a perfectly normal manner. The method was also found effective in bringing about an ether anesthesia easily and readily. The real test of it will have to be made, however, on human beings, and when carried out with care it can certainly do no harm.

748

Vincent's Angina in Children. J. A. Mulholland.

Original contribution to The Laryngoscope, p. 1356, Dec., 1912.

750

Operation for Pneumatocele of the Parotid Gland and Stenson's Duct. Narath, *Deut. Ztschr. f. Chir.*, Vol. 112, p. 201, 1912.

Case in which swelling had developed slowly from glass-blowing during nine years, and in which a cure resulted from operation. Ed.

755

Development of the Teeth and Occlusion as Factors in the Development of Facial Bones. F. B. Noyes.

Original contribution to The Laryngoscope, p. 1261, Nov., 1912.

757

Vinçent's Angina. T. E. Oertel, *Jour. Med. Assn. of Ga.*, p. 277, March, 1912.

Oertel gives a list of synonyms for Vincent's angina, a definition, its history, geographic distribution, bacteriology, means of staining the organisms, associated organisms, pathology, symptomatology, complications, duration of the attacks, contagiousness, means of diagnosis, prognosis and treatment. Ed.

762

Primary Gangrene of the Pharynx. A. Poppi, *Arch. ital. di Otol.*, p. 132, March, 1912.

Two cases of primary gangrene of the pharynx are reported, one in a woman of 48 years and the other in a man of 24; both were fatal. The previously recorded cases are mentions, the etiology of the disease discussed and the clinical symptoms, especially the presence of black scabs on the tonsils, the rapid progress of the disease, dysphagia, high fever and hemorrhage pointed out. Therapy consists in application of antiseptics, subcutaneous injection of anti-streptococcal serum and administration of excitants. ED.

763

Pedunculated Lipoma of the Pharynx. PORTA, *Gaz. degli Osped.*, March 31, 1912.

Pedunculated submucous lipoma of the oro-pharynx in a child of 16 months. The tumor looked like a second tongue and caused such great difficulty in breathing that surgical intervention was most urgent. ED.

772

Study of Streptococci From Milk and From Epidemic Sore Throat and the Effect of Milk on Streptoccccin. E. C. ROSENOW, *Jour. Infect. Dis.*, Nov., 1912.

During a recent epidemic of sore throat due to milk in Chicago, Rosenow found that: 1. Streptococcin virulent to animals but which differ from typical streptococcus pyogenes in a more abundant growth in being encapsulated and not forming chains, and in causing but little heinolysis. occurring in predominated numbers in epidemic sore throat of milk borne origin. On artificial cultivation these strains sooner or later assume the characteristics of streptococcus pyogenes. 2. By placing streptococcus pyogenes in unheated milk it becomes modified so as to correspond to the streptococci in epidemic sore throat. 3. The fact that milk so modifies streptococci is an additional indication of the important part it may play in epidemic sore throat. 4. Milk drawn in a sterile way from normal cows may contain virulent streptococci and pneumococci; hence. "certified milk" while surely less contaminated than ordinary milk, may contain pathogenic bacteria, and the advisability of pasteurization even in this case should be considered, especially in seasons when sore throat is common. HALSTED.

776

Brief Report of an Epidemic of Sore Throat with Involvement of the Cervical Lymph-nodes. JOHN RUEHRAH, *Am. Jour. of Dis. of Children*, Nov., 1912.

Dr. Ruehrah reported his observations of an epidemic of sore throat with involvement of the cervical lymph-nodes. These conclusions were reached: (1) A streptococcus infection may be caused by infected milk, and this disease may be exceedingly severe and attended with numerous complications and fatalities. (2) Even in cold weather milk may be the source of the disease. (3) No matter how carefully raw milk is handled it may at times be a source of danger. (4) The milk supplied to cities should be pasteurized, and where by accident the dairy company cannot properly pasteurize its milk, it should be compelled to notify its consumers, so that they can either pasteurize or boil the milk. HALSTED.

777

Case of Angioma of the Oro-pharynx. W. Sanderson, *Brit. Med. Jour.*, Feb. 17, 1912.

Patient was a girl of 10 years who was brought to the author because of slight cough; no discomfort nor difficulty in swallowing; not a mouth-breather. Inspection revealed a diffuse bluish-red growth involving the pharyngeal wall in its posterior and lateral aspects extending as far as the posterior faucial pillars. Posterior rhinoscopy showed that it ceased by a horizontal margin just above the level of the soft palate. The laryngoscope showed the central ridge terminating in a rounded bulbous extremity which frequently came into contact with the tip of the epiglottis. Minute area of right posterior faucial pillar also involved, no large vessels visible; mucous membrane itself affected with the disease. Ed.

793

Case of Pharyngotomia Subhyoidea with Laryngeal Fissure Operated Under Local Anesthesia. Tapia, *Rev. espan. de Laringol.*, Jan.-April, 1912.

After an injection of novocain-suprarenin along the line of incision Tapia exposed the superior laryngeal nerve and for ten minutes applied a cotton pad dipped in ten per cent cocain; the laryngeal cavity was treated with the same solution. All pain was thus avoided. Ed.

804

Angina Blastomycosa. C. J. P. Van Zadelhoff, *Med. Weekblad.*, May 4, 1912.

During the diphtheria epidemic in Zandvoort in 1911 all anginas were bacteriologically examined. Twenty cases showed the presence of yeast fundus. The clinical condition was similar to that of a mild catarrhal or lacunar angina. Goldstein.

817

So-called Mixed Tumors of the Salivary Glands. L. B. Wilson and C. Willis, *Am. Jour. Med. Sci.*, p. 656, May, 1912.

This paper is based upon a study of fifty mixed tumors of the parotid and six of the submaxillary glands, usually in young adults. The tumors cause but slight inconvenience and surgical relief is not sought for years. They are probably mesotheliomata of embryonic origin. Recurrence after complete removal is rare. Ed.

824

Salvarsan in Local Treatment of Vincent's Angina. C. Achard, *Bull. de l'Acad. de Med.*, Oct. 8, 1912.

Achard prefers the local application of salvarsan in Vincent's angina to the intravenous method used by Ehrlich, Rumpel and Gerber because of the lessened danger and also because this affection is local. In one very stubborn case in which the velum of the palate was deeply ulcerated and the uvula had been destroyed salvarsan applied in solution and then in powdered form resulted in improvement and rapid cicatrization. In another very severe case salvarsan in glycerin applied three times a day for four days resulted in a cure.

In cases in which it is difficult to make a differential diagnosis between syphilis and Vincent's angina salvarsan, locally, is especially indicated, since no risk is run and there is hope for cure in either case. Ed.

825

Local Application of Salvarsan. A. Allport, *Brit. Med. Jour.*, p. 349, Aug. 17, 1912.

Man, aged 50, with no history or suspicion of syphilis suffered from a sore tongue due to excessive smoking. The condition became more acute and painful upon the administration of iodid and mercury though the patient gave up smoking. After two days of salvarsan, locally applied, the ulcers diminished to one-quarter their former size and a cure was effected. Ed.

826

Treatment of Bucco-lingual Leucokeratosis With Copper Sulphate Solution. Avierinos, *Le Larynx*, No. 3, 1912.

For twenty days each month the author applied this solution: (cupr. sulf. 20; ag. dist.; glycerin ana 10.0) with very good results. Ed.

828

Experiments With Autolytic Solutions in the Treatment of Inoperable Cancer of the Throat, Neck and Face. J. C. Beck, *Ann. of Otol.*, p. 198, March, 1912.

This therapy is based on Cohnheim's cancer theory, namely that at birth there is a substance in the blood which is inimical to cancer-growth and as long as this substance is present in the blood no carcinoma develops even though the "mechanical, chemical and organic irritation be manifest." Therefore this therapy provides for injecting this solution obtained either from the carcinoma or from a fetus. Three cases are reported; in two the treatment was successful; the third has received too few injections to warrant conclusions. Ed.

836

Palato-plastic. A. Castex, *Bull. d'Oto-Rhino-Laryngol.*, p. 251, July, 1912.

In all patients over 5 years the operation is done at one sitting usually under chloroform. The technic is described. The sutures are left in place from ten to thirty days. Ed.

845

Surgical Treatment of Tumors of the Pharynx by the Buccal Route. Durand and Gault, *Rev. Hebd. de Laryngol. d'Otol. et de Rhinol.*, May 18, 1912.

The surgical treatment of tumors of the pharynx by the buccal route is a much safer procedure for the patient than the classic pharyngotomy. It should therefore be recommended to the attention of surgeons who are too much disposed to prefer the large incisions of the external route. Internal pharyngotomy is absolutely indicated in all benign or encapsulated tumors and is preferable in malignant tumors which are clearly limited. Thanks to internal pharyngotomy, we can escape both the terrible dilemma of desperate abstention and the mutilating and so often fatal external operation. Scheppegrell.

846

Surgical Removal of Tonsils. H. A. FOSTER, *Am. Jour. of Surg.*, p. 150, April, 1912, and *Jour. Ophth. Otol. and Laryngol.*, p. 143, April, 1912.

In this paper Foster advocates finger enucleation as the quickest and best procedure. The tonsils are removed entire and in the 1500 cases in which Foster has employed this technic he had no instance of hemorrhage. He further asserts that under all conditions and in any age patient the tonsil may be removed by this procedure. ED.

854

Method of Enucleation of the Tonsil. C. W. HOPE, *Brit. Med. Jour.*, p. 542, March 9, 1912.

The author uses two forceps which serve when open as elevators and closed to grasp and hold back the palatal arch. He describes his technic in full. Hope uses chlorethyl anesthesia for his hospital work and chloroform-ether in his office operations. ED.

855

Control of Tonsillar Hemorrhage. H. HORN, *Nurses Jour. of Pa. Coast*, June, 1912.

In this article Horn outlines to nurses what procedure to follow when they are confronted with hemorrhage cases following tonsillar operation. ED

859

Citron Juice in the Treatment of Angina. KELLER, *Gaz. Med. de Paris*, 1912.

Gargling with a mixture of citron juice, water and 2 per cent potassium chlorate or a 50 per cent solution of lusoform is recommended as well as applications of pads, dipped in this solution, several times a day. Compresses of cold or warm water may be used in conjunction with this solution. ED.

869

Preliminary Laryngotomy in Operations Upon the Tongue. NEWBOLT, *Liverpool Med.-Chir. Jour.*, Jan., 1912.

Newbolt points out as advantages of preliminary laryngotomy in operations upon the tongue that the surgeon can see what he is doing, there is no hurry, no blood enters larynx, the anesthetist is not in the surgeon's way. The prognosis is good if the diagnosis is made early and if the excision is extensive including removal of glands of neck. ED.

879

Closure of Cleft Palate by Gradual Pressure. B. F. SHEA, *Intern. Jour. of Surg.*, April, 1912.

In the historical review of this procedure this operation is traced back to Lemonier (1776) a French dentist. Shea's variation from the present day modification is the use of a gold bar and platinum wire, 18 gauge. It has threaded ends with nuts attached; these are screwed a little each day, the gradual, constant pressure closing the cleft. The soft parts of the mouth are protected by gutta percha. ED.

891

Technic of Tonsillectomy. S. Tenzer, *Wr. klin. Wchnschr.*, Jan. 18, 1912.

Tenzer recommends Sluder's method of tonsillectomy and describes the technic.

Ed.

892

X-ray Measurements of the Permanent Teeth Before Eruption to Provide for Early Regulation of the Dental Arch. S. Tousey.

Original contribution to The Laryngoscope, p. 1300, Nov., 1912.

896

Local Salvarsan Therapy With Especial Reference to Spirochetes in the Oral Cavity. Zilz, *Muench. Med. Wchnschr.*, p. 21, 1912, and *Deut. Zahnaerzt. Ztng.*, No. 1, 1912.

Abstracted in The Laryngoscope, p. 1118, Sept., 1912.

897

Use of Salvarsan in Treatment cf Ulcerous Scarlatinal Anginas, Noma and Ulcero-membranous Stomatitis. Zuber and Petit, *Med. Pract.*, No. 41, p. 649, 1912.

Local applications of arseno-benzol in glycerin-solution (1-10 or 1-20) were so effective that intravenous injection was rarely required. Even in the severe ulcerous or gangrenous forms of scarlatinal angina this therapy resulted in seven cures in twelve cases.

Ed.

902

Complications of Frontal Sinus Suppurations. Eckstein, *Ztschr. f. Laryngol. Rhinol, u thre Grenzgeb.*, p. 291, Bd. 5, Heft. 2, 1912.

Chimney-cleaner, 15 years old, complained for 10 days of pain in left frontal region and left eye. Temperature 39°. Left frontal region sensitive to pressure. Both eyelids red and swollen, especially the lateral portion of the left upper lid from whence the neighboring frontal region was involved. Left chemosis conjunctivae and protrusio bulbi. Bilateral swelling of the middle turbinates and pus in ostium frontale. Douching of left sphenoid sinus showed the presence of pus. Anterior part of left middle turbinal removed with an incision along the margo supraorbitalis; foul smelling, discolored pus issued from a sub-periosteal abcess. Increase in swelling of eyelids, left eye improved. Patient somnolent and temperature high; heart-action irregular.

Operation disclosed a second periosteal abscess above the lateral half of the margo supraorbitalis on the anterior wall of the os frontal. The bone showed presence of osteomyelitis and its disease spread into the frontal region and involved most of the os frontal. No bridge could be formed. The frontal sinus was scarcely as large as a cherry pit and was filled with discolored pus. Ethmoid and sphenoid sinus cleaned out; then typical, radical Killian operation on right side; here no osteomyelitis. The small frontal, ethmoid and sphenoid sinuses contained but a small amount of pus and thick discolored mucosa. Death. Autopsy showed a purulent thrombosis of the longitudinal sinus and an extra-dural abcess above the upper half of the left frontal lobe; no meningitis.

Ed.

907

Report of a Case of Mucocele of the Frontal Sinus with Dilatation. G. C. HALL.

Original contribution to THE LARYNGOSCOPE. p. 955, July, 1912.

908

Twenty-eight External Operations on the Frontal Sinus. H. HORN, *Cal. State Jour. of Med.*, Feb., 1912.

Horn states that the greatest protection against a fatal termination and the best security for an absolute cure lies in the preliminary intranasal work, which should extend over months. The ethmoid, sphenoid and antrum should receive attention before the operation, the operation should be carried out as radically as possible and perfect drainage established.

In 7 of Horn's 28 cases a cure took place in from 5 to 8 days, and 12 in from 10 to 14 days. Three cases were only cured (after 3 weeks) because of the radical procedure and because perfect drainage was secured by negative pressure. Reoperation was only necessitated in those cases in which the method at the first operation had been too conservative.

ED.

910

Fronto-ethmoidal Trepanation. A. IWANOFF, *Ztschr. f. Laryngol., Rhinol., u. ihre Grenzgeb.*, p. 265, Bd. 5, Heft 2, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1233, Oct., 1912.

912

Development of the Frontal Sinus LASAGNA, *Gaz. degli Osped.*, June 2, 1912.

The frontal sinus may develop from three ethmoid cavities or cells. The anterior is the one most constantly found, the middle develops behind the anterior and may become superficial in the region of the processus orbitalis, the posterior (when it exists) is located in the posterior part of the orbital vault in the processus clinoideus anterior. The operative method preferred is that of Jacques with opening of the arcus superciliaris from below, because this procedure permits of a thorough exploration of the various cavities of the frontal sinus. ED.

913

Case of Osteoma and Mucocele of the Frontal Sinus with Perforation of the Cerebral Wall. W. PFEIFFER, *Ztschr. f. Ohrenh.*, p. 223, Bd. 64, Heft 3, 1912.

In Pfeiffer's case the tumor appeared in a young patient (a student of 24 years). Previous to the clinical symptoms the patient was always healthy and had never had any inflammation in the nasal accessory sinuses. No history of trauma. Microscopic examination failed to reveal cartilage tissue. In the course of the disease an otitis media developed complicated by exostoses of the anterior and posterior wall of the auditory canal. Eventual recovery. ED

916

Circumscribed Orbital Edema from Frontal Sinusitis. W. C. POSEY, *Ann. of Ophth.*, April, 1912.

Interesting report of a case of circumscribed swelling in the orbit due to sinus inflammation. The author feels that the sinus infection was followed by orbital infiltration, probably of the nature of a collateral inflammatory edema. ED.

917

Review of Eighty-one Cases of Inflammation of the Frontal Sinus; A Comparative Study. G. L. RICHARDS.

Original contribution to THE LARYNGOSCOPE, p. 100, Feb., 1912.

919

Unusual Sinus Frontalis. J. P. SCHAEFFER, *Ann. of Surg.*, p. 396, Sept., 1912.

The left sinus of this cadaver presents nothing unusual; the right side, however, projects beyond the mid-sagittal plane. Its greatest transverse measurement is 50 mm. and the greatest ventro-dorsal but 10 mm. It hardly extends over the orbit but projects into the squama frontalis. On the dorsal wall a round ostium (2 mm. in diameter) is noted which leads to a large accessory sinus immediately dorsal to the normal sinus. A large accessory frontal sinus communicating with the right frontal sinus is found; it measures 37 mm. in its greatest transverse dimension and 30 mm. in its greatest ventro-dorsal extent, and projects somewhat into the squama frontalis extending dorsal into the pars orbitalis of the frontal bone. The ethmoid infundibulum ends in an anterior ethmoid cell. Schaeffer also discourses on the genesis of this condition. ED.

923

Frontal Sinusitis. VAN DEN WILDENBERG, *Anvers Med.*, May 31, 1912.

All suspected cases of frontal sinusitis in infants should be examined by means of the Roentgen rays. Three cases are reported from which the author concludes that the etiological factor in this disease is not always scarlatina. ED.

927

Cubical Capacity and Superficial Area of the Sphenoid Sinus. H. W. LOEB, *Ann. of Otol.*, March, 1912; and *Interstate Med. Jour.*, Dec., 1912.

Loeb found that the cubical capacity in the twenty sphenoid sinuses examined varied from 0.6 to 11.8 ccm. with an average of 5.145 ccm.; and the superficial area from 2.4 to 28.2 qcm. with an average of 16.65 qcm. ED.

930

Roentgen Rays as an Aid to the Diagnosis of Diseases of the Sphenoidal Sinus. ROSS HALL SKILLERN, *Ann. of Otol.*, p. 849, Dec., 1912.

The diagnosis of sphenoidal disease at best is not an easy matter, and oft-times requires repeated examinations before a purulent secretion can be traced to its origin. General symptoms may be marked, and the local symptoms be mild or entirely absent. A resection of one or both turbinates is often necessary before the sphenoidal wall becomes accessible to inspection and subsequent instrumentation.

The Roentgen rays have proven of the greatest definite diagnostic value. From a rhinologist's point of view the important facts elicited are as follows: (1) The difference in the shadow intensity of the two sides; (2) whether the shadow or abnormal opacity also involves the posterior ethmoid cells; (3) the size of the sphenoid sinus; (4) the distance between the anterior wall and the vestibulum nari; (5) the shape of the sphenoid sinus with special reference to the posterior or cerebral and the lateral wall. The first and second are of importance for diagnosis, and the third, fourth and fifth for operative purposes.

Examinations should be complete, and this involves a study of the other accessory sinuses as well. From four to six or more exposures are required—at least two postero-anterior and one lateral are essential. This is then made more complete by making two lateral stereoscopically and adding two oblique. In exceptional cases a vertical or antero-posterior view is needed.

Not only are the rays useful in diagnosing catarrhal and purulent disease of the sphenoid sinuses, but valuable information will be obtained also in demonstrating the extent of new growths and thus a complete operation can be done when advisable, or a meddlesome operation may be avoided.

Much depends upon the making of good negatives but more upon skillful interpretations.

931

Sphenoidal Sinusitis in Relation to Optic Neuritis. J. P. TUNIS.

Original contribution to THE LARYNGOSCOPE, p. 1157, Oct. 1912.

933

Ethmoidectomy for Epithelioma. AUDIBERT, *Rev. hebd. de Laryngol.*, Feb. 24, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1050, Aug , 1912.

935

Relation of Diseases of the Posterior Sinuses to Painful Condition of the Ear. J. H. BRYAN.

Original contribution to THE LARYNGOSCOPE, p. 1362, Dec., 1912.

937

Orbital Cellulitis in a Child Due to Ethmoidal and Sphenoidal Sinusitis. J. H. GUENTZER, *Proc. N. Y. Acad. of Med.*, April 24, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1154, Sept., 1912.

938

Papilloma Durum of the Ethmoid and Sphenoid Region Removed by the Denker Operation. B. HANNEMANN, *Ztschr. f. Ohrenh.*, p. 1, Bd. 65, Heft. 1, 1912.

Woman of 59 years; nose stopped up since two years. Rhinoscopy showed the left side filled with a partially soft and partially hard tumor-mass. Wassermann, negative. X-ray picture showed distinct shadow in the left nasal cavity and a somewhat less distinct one in the left maxillary sinus. Histological diagnosis pointed to carcinoma. Removal in toto by means of the Denker operation. Uneventful recovery and no recurrence within ten months. Ed.

944

Enlargement of Blind Spot and Central Scotoma in Diseases of the Posterior Nasal Sinuses.

Ruebel, *Klin. Monatschr. f. Augenh.*, p. 136, Aug., 1912.

Case 1: Bilateral empyema of ethmoid cells; extensive bilateral enlargement of blind-spot for red and green which disappeared a few days after opening of posterior ethmoidal cells; left posterior ethmoidal cells in contact with left and right optic canal.

Case 2: Large central scotomas for red and green around blind-spot, enlarged for white; small paracentral absolute scotomas for red and green, close to point of fixation, paralysis of accommodation in left eye. Removal of middle turbinate relieved all these symptoms.

Case 3: Typical Van der Hoeve's symptom, without central scotoma, in right eye following exacerbation of chronic nasal catarrh on right side involving ethmoid cells. Opening latter relieved para-central scotomas.

Case 4: Large absolute central scotoma extending beyond blind spot, enlarge for white. Operation for bilateral empyema of ethmoid cells. This case showed that operative cure of nasal disease results in great improvement even if the papillo-macular bundle of the optic nerve is affected. Ed.

953

Radical Operation by the Endo-nasal Route for Chronic Maxillary Sinusitis.

R. Arnal, *These de Paris*, 1912.

Arnal draws these conclusion: Most chronic maxillary sinusitis can be spontaneously cured by simple avulsion of the dental caries. If the molar and pre-molar teeth on the side of the affected sinus are intact, douching the sinus is the best measure. If these douchings have no effect, surgical intervention is indicated. The best operative procedure which exposes the maxillary antrum in the easiest and most complete manner is trepanation of the canine fossa. The Caldwell-Luc operation is too complicated and serious and the author, therefore, recommends the endonasal method originated by Rethi-Claoue and modified by Mahu as the simplest and most effective procedure. Ed.

958

Report of a Case of Simulated and One of True Maxillary Empyema, Both of Dental Origin.

M. R. Bren, *Jour. A. M. A.*, p. 1010, April 6, 1912.

Case 1: Several years after having his upper teeth pulled patient developed such severe swelling and pain on the right side that the eye could not be opened. Nose normal, transillumination revealed dark shadow in right maxillary sinus. Recovery set in after removal of the root apex of the canine tooth around which there were two small fistulous openings discharging pus.

Case 2: Deafness, tinnitus and maxillary sinusitis developed due to partial extraction of a dental root. Rhinoscopic examination of the antrum revealed a portion of root of tooth lying on the outer edge of the upper antral opening. Removal of this stopped suppuration. ED.

972

A Case of Latent Suppuration of the Alveolar Process Simulating Chronic Antral Empyema. GOLDMAN, *Monatschr. f. Ohrenheilk, u. Laryngo, Rhinol.*, Vol. 46, p. 1001, No. 8, 1912.

The writer himself was stricken with a chronic maxillary sinus suppuration following an attack of influenza. The symptoms of the former were extended to the first molar and second bicuspid, these symptoms, as also the nasal discharge, disappeared upon removal of the bicuspid tooth. A skiagraph showed the alveolar process around these teeth diseased. The negative history previous to the influenzal attack excludes the presence of a suppurating dental cyst; an osteomyelitis of the process communicating with the abcess adjoining the maxillary sinus was diagnosed. The latent appearance of the dental symptoms are supposedly due to an extension of mucous membrane, necrosis affecting the bone contiguously rather than through an hematogenous pathway. The importance of skiagraphy of the alveolar process in diagnosis and prognosis of antral disease is especially mentioned. KLEENE (STEIN).

976

Prophylaxis of Maxillary Development. N. S. HOFF, *Dental Register*, May, 1912.

Before the eruption of the permanent teeth a systematic oral prophylaxis should be undertaken especially in respect to the palatal arch so that each tooth may have enough room. Often infection from hypertrophied tonsillar crypts spreads to the mouth and prevents the normal development of the teeth and maxilla. Mouth-breathing should be corrected. Often it is caused by tonsils, adenoid vegetation or faulty occlusion of the teeth. ED.

979

Removal of Foreign Body from the Maxillary Sinus. LAWNER, *Wr. med. Wchnschr.*, No. 25, 1912.

A drainage tube remained in maxillary sinus since its opening two years previously through alveolar process. Suddenly severe antritis; opening of antrum through nose (modified Mikulicz' method) and draintube (7 cm. long) thus removed. ED.

983

Pathology and Diagnosis of Maxillary Sinus Suppuration. G. W. MACKENZIE, *Proc. Phila. Laryngol. Soc.*, April 30, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1053, Aug., 1912.

986

Anatomy of the Maxillary Sinus. C. A. O'Reilly, *Proc. Phila. Laryngol. Soc.*, April 30, 1912.

Abstracted in The Laryngoscope, p. 1052, Aug., 1912.

989

Orbital Cellulitis from Disease of the Superior Maxilla in Children. W. C. Posey, *Jour. A. M. A.*, p. 1020, Sept. 21, 1912.

Posey discusses in connection with the two cases reported the anatomic conditions of the development of the superior maxillary and points out that infection of the alveolar border can easily arise during eruption of teeth followed by inflammation of the entire bone. Traumatism may also produce orbital cellulitis, especially if the vitality is low. Tuberculosis, scarlet fever, typhoid and tonsillitis are also predisposing factors. The X-ray is of great aid in making a diagnosis; treatment should consist in evacuating the pus and establishing proper drainage. Ed.

990

Angiomata of the Antrum of Highmore. E. F. Reamer, *Jour.-Lancet*, Jan. 1, 1912.

One case is reported in detail. In spite of repeated recurrence which necessitated further interventions the author regarded the tumor as benign. Ed.

997

Case of Panantritis Acuta Dextra in a 4-year-old Boy. Fritz Schlemmer, *Monatschr. f. Ohrenh.*, p. 1229, Bd. 46, Heft 10, 1912.

Patient since his fifth month had numerous attacks of angina, one of which being followed by a typical pneumonia; 3 months later another angina was followed by swelling of the right upper and lower eyelids, edema of eyebrow and root of nose; anterior rhinoscopy showed right side intensely swollen and filled with thick purulent secretion. The frontal sinus was opened (Killian), ethmoid cells exenterated, the minute sphenoid also opened and antrum punctured through canine fossa. Eight days later both tonsils were removed, the right one was very adherent and its crypts filled with desquamous epithelium; leucocytes and soft purulent props, which leads the author to consider the tonsils as etiological factors. Patient made an excellent recovery in ten days. Kleene.

1004

Non-suppurative Sinusitis. A. H. Andrews, *Jour. of Ophth. and Oto-Laryngol.*, p. 75, March, 1912.

Abstracted in The Laryngoscope, p. 758, May, 1912.

1007

Malignant Neoplasms of the Accessory Sinuses. Albert E. Bulson, *Jour. Ind. State Med Assn.*, Sept. 15, 1912.

Of the twelve cases reported in this article only one is still alive, and Bulson states that all but two died as a result of the malignant disease.

Tumors in the accessory sinuses are usually sarcomata and hypho-sarcomata, rarely epitheliomata. Malignancy is most common in youth and early middle age. The growths arise in the muco-periosteum and spread filling the sinus and involving the neighboring tissues. Sensory and motor disturbances are generally present in some form. The etiology of these growths is unknown, though heredity, trauma and sinusitis may be factors. The early symptoms are vague and the diagnosis, therefore, difficult. Under treatment Bulson considers the indications for operative intervention and the other therapies used. Ed.

1011

Four Deaths in Latent Sinusitis. G. F. Cott, *Am. Jour. of Surg.*, March, 1912.

Cott traces these infections to a recent or remote attack of influenza. The infection travels along the sheaths of nerves or vessels or through the ethmoid or sphenoid sinuses to the meninges. Headache is always present, and sometimes also bulging of one or both eyes. He states that until more post-mortem data is got, no exact conclusions as to the source of infection is ascertainable. Ed.

1012

Latent Sinusitis; Symptoms and Results, Immediate and Remote. G. F. Cott.

Original contribution to The Laryngoscope, p. 106, Feb., 1912.

1016

Nasal Accessory Sinuses; Different Methods of Treatment. I. M. Hurd, *Can. Prac. and Rev.*, Feb., 1912.

The usual cause of a sinus trouble is a deformed middle turbinate, with which is frequently associated a septal deviation to that side, or an enlarged ethmoidal bulla or the uncinate process may crowd in upon the fronto-nasal duct. An acute exacerbation is far more dangerous than a chronic inflammation.

Acute inflammation will without complication usually recover under simple medical measures, whereas those cases that have the sinuses filled with a very thick membrane are very obstinate to intra-nasal treatment. The writer favors complete curettement of the mucous membrane in the radical antrum operation, and is particular to cut the flaps of nasal mucous membranes so as to cover the vertical anterior edge of the the X-ray plate in determining the question of internal or external operation is important, for if the cells extend out over the orbit the chances of intra-nasal cure are not good.

Supra-orbital neuralgias of a periodic type are frequently due to changes in the frontal sinus secretion in which a very thick mucus is produced. Wishart.

1020

Discussion on the Diagnosis and Treatment of Conditions in the Accessory Sinuses Giving Rise to Oculo-orbital Symptoms. A. Onodi, *Jour. of Laryngol.*, p. 9, Jan., 1912.

Onodi gives a long list of symptoms, and discusses the diagnosis and therapy. If the antrum or frontal sinus are diseased he feels that they should be radically drained. If, in the presence of ocular symptoms the rhinoscopic findings are negative except for hypertrophy of the middle turbinate, this bone should be resected and the ethmoids opened. Ed.

1021

Bilateral Papillo-edema with Central Scotoma from Sinusitis. F. J. PARKER, *Ophthalmology*, p. 170, Jan., 1912.

Man, aged 38. Upon admission to hospital no pain nor headache; X-ray revealed no sinus involvement; nasal examination showed slight congestion of middle turbinate and discharge from right antrum only. Middle turbinate removed; ethmoid curretted and drained; sphenoid opened; gradual improvement. ED.

1026

Intra-orbital Lesions Secondary to Disease of Accessory Sinuses of Nose. J. W. WALTERS, *Old Dom. Med. Jour. of Med. and Surg.*, p. 1, Jan., 1912, and *Jour. of Ophth. and Oto-Laryngol.*, p. 71, March, 1912.

Abstracted in THE LARYNGOSCOPE, p. 790, May, 1912.

1030

Some Observations on the Treatment of Chronic Inflammation of the Nasal Accessory Sinuses. C. G. COAKLEY, *Proc. N. Y. Acad. of Med.*, April 24, 1912.

Abstracted in THE LARYNGOSCOPE, p. 70, Jan., 1913.

1031

Extra-nasal Surgery of the Maxillary Sinus. G. M. COATES, *Proc. Phila. Laryngol. Soc.*, April 30, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1060, Aug., 1912.

1032

Result of Plastic Operation (with Insertion of Celluloid Plate) for Relief of Excessive Deformity Following Killian Operation. G. C. COCKS.

Abstracted in THE LARYNGOSCOPE, p. 151, Feb., 1913.

1033

Surgical Management of Nasal Accessory Sinus Disease. L. A. COFFIN, *Med. Rec.*, p. 1021, June 1, 1912.

Abstracted in THE LARYNGOSCOPE, p. 215, March, 1913.

1035

Technic for Operations on the Sinuses of the Face. A. DENKER, *Arch. intern. de Laryngol.*, p. 17, July-Aug., 1912.

Denker points out in this paper the advantages of combining local with general anesthesia. ED.

1048

Endo-nasal Treatment of Frontal Sinusitis. E. V. SEGURA, *Semana Med.*, May 23, 1912.

An opening is made into the lower part of the sinus merely at the cost of a small portion of the middle turbinate. This technic has been successfully employed in forty cases with complete uncomplicated recovery. In the X-ray photograph accompanying the article the instrument is shown in place. The technic, details of the procedure and instruments are fully detailed. ED.

1050

Intra-nasal Operations on the Maxillary Sinus. R. H. Skillern, *Proc. Phila. Laryngol. Soc.*, April 30, 1912.

Abstracted in The Laryngoscope, p. 1058, Aug., 1912.

1057

Aplasia of the Epiglottis. K. Beck, *Ztschr. f. Ohrenh.*, p. 249, Bd. 65, Heft 2-3, 1912.

Apropos of this case of congenital malformation of the epiglottis Beck points out that the history of its embryonic development shows that it is an independent structure. In this case no "anlage" of the epiglottis took place. Ed.

1058

Functional Inspiratory Cramp of the Glottis. G. Brat, *Ned. Tydschr. v. Gen.*, Vol. 1, No. 11, 1912.

Boy of 15 years. Difficulty in breathing and pains on swallowing for the last six months. Lately pains in the chest, fatigue; normal breathing during sleep; voice clear. Convulsions at the age of 3; diphtheria at the age of 6 years. Pronounced inspiratory stridor. Pulse and respiration accelerated. Large goiter, right infiltration of the optic nerve; perverse irregular motion of the vocal cords and also abduction. These symptoms together with the disappearance of the stridor during sleep confirmed the diagnosis of dyspnea spastica. Ed.

1060

Large Papilloma of the Epiglottis Removed by Fulguration. R. H. Johnston.

Original contribution to The Laryngoscope, p. 1360, Dec., 1912.

1062

Epiglottic Cysts Apropos of a Case. J. Mischkin, *Dissertation-Koenigsberg*, 1912.

Mischkin concludes from his observations that epiglottic cysts usually develop on the lingual aspect of the epiglottis; this anterior surface is more exposed than the other parts during the act of swallowing. This exposure results in frequent catarrh of this surface which in turn causes cysts. These cysts occur most often in men of from 18-50 years; they are a form of retention cysts. Ed.

1063

Epithelioma of the Epiglottis. Removal by the Trans-hyoidian Route. E. J. Moure, *Rev. hebd. de Laryngol.*, Jan. 27, 1912.

Abstracted in The Laryngoscope, p. 1019, Aug., 1912.

1067

Papillomata of the Larynx Cured by Radium. Abbe, *Ann. of Surg.*, p. 470, Sept., 1912.

Girl of 16 had fibroma removed from left vocal cord; recurrence and larger growth removed two months later. After a few months extensive papillomata covering this cord and portion of other cord. Speaking voice lost and evidences of respiratory obstruction.

Under ether anesthesia tracheotomy; wire passed through larynx to mouth, and a capsule of pure radium (100 mg.) suspended between cords during anesthesia; tracheotomy wound closed; voice improved; laryngoscopic examination showed restoration of cords to normal condition; no trace of papilloma. In ten months complete recovery. Ed.

1070

Persistent Falsetto Voice. S. Baglioni and Bilancioni, *Arch. ital. di Otol.*, p. 361, Vol. 23, No. 5, 1912.

Persistent falsetto or eunuchoid voice is a functional anomaly due to the habit of using head tones rather than chest tones—a habit which the patient has formed in order to overcome functional difficulties in speaking possibly caused by catarrhal affections of the larynx, disturbances in nasal respiration, or faulty development. Ed.

1080

Role of Emotion in Stuttering and Lisping. Chervin, *Semaine Med.*, Jan. 24, 1912.

Abstracted in The Laryngoscope, p. 67, Jan., 1913.

1089

Functional Aphonia. O. Glogau, *Proc. N. Y. Acad. of Med.*, Oct. 23, 1912.

Abstracted in The Laryngoscope, p. 145, Feb., 1913.

1091

The Chorus Girl's Vocal Troubles. C. P. Grayson, *Jour. A. M. A.*, p. 990, April 6, 1912.

Grayson recommends the greatest possible conservation of the voice, even in speaking; strenuous local therapy should be avoided, as well as cocain, suprarenin and vinum Mariani. After all catarrhal symptoms have ceased strychnin and electricity is permissible. Ed.

1092

Right-sided Vocal Paralysis; X-ray Plate Showing Probable Aneurysm; Autopsy Revealing Carcinoma. J. H. Guntzer, *Trans. N. Y. Acad. of Med.*, Nov. 27, 1912.

Abstracted in The Laryngoscope, p. 233, March, 1913.

1093

Habitual Paresis of the Vocal Cords. Gutzman, *Berl. klin Wchnschr.*, Nov. 18, 1912.

This condition is usually found in children but sometimes persists into adult life. The affection is due to auto-imitation—after a temporary paresis the child unconsciously imitates the condition until a habit is formed. In the habit state voluntary control of the muscles still remains. The manifestations are hoarseness, whispering voice, or inspiratory stridor. Ed.

1101

Prophylaxis of Speech Defects. H. Horn, *Cal. State Jour. of Med.*, Jan., Feb., 1912.

Horn points out that the stutterer is usually mentally normal and lags behind his class merely because of his physical infirmity. Occasionally stuttering develops at the time of puberty due to over-strain of the nervous system. Frequently removal of adenoids and other nasal obstructions will alleviate the condition. Psychic shock is a very potent factor as is also psychic infection, and the stutterer should, therefore, be isolated. The fact that after puberty stuttering is met more frequently in the male is explained by some writers as due to breathing and by others as due to the woman's care to overcome imperfections.

Stuttering is a great handicap and should be corrected by teaching the child to speak properly. The model from which the child copies should be nearly perfect, and the child guarded from contact with persons speaking incorrectly. The physiologic sequence of consonants should be observed in teaching the child and the gradual development of speech carefully watched. Great attention should be given to developing careful articulation in the child.

In contra-distinction to stuttering, stammering is greatly helped by the school. Only 6 per cent remain after the fourteenth year and Horn feels that if the teacher were better informed on this subject the percentage would be cut down more. Ed.

1108

Double Set of Vocal Cords. E. Lautenschlaeger, *Arch. f. Laryngol.*, p. 706, Bd. 26, Heft 3, 1912.

In patient of 21 years who presented himself for a submucous operation a double bilateral set of vocal cords were found. During phonation the vocal cords could be seen, slightly reddened, somewhat thickened, closing well, and easily movable. During aspiration, however, below the level of the normal cords a second cord could be seen on either side. They were snowy white, shining like tendons, extending from the anterior commissure to the vocal process; they were about one third thicker than the upper cords, lying about 1 mm. deeper than these and separated from them by a groove. When the upper layer was in motion, the two lower cords participated in the movements, but they could not be seen during phonation because they were hidden below the upper contracted cords. The closure of the glottis seemed good, but the voice was somewhat hoarse, probably because the upper cords had less tendon layers than the snow-white lower ones and were softer. The findings were the same on both sides. The double formation seemed to be congenital. The patient had never been seriously ill, and only hoarse from infancy on. Croupous ulcers, tuberculosis and lues are excluded in this case as cause of the twin formation. The author proposes to fill the gap between the cords with paraffin and thus to form one thicker cord on either side.—*Ex.*

1116

Preliminaries to Speech Teaching. S. J. MONRO, *Volta Rev.*, p. 468, Jan., 1912.

Monro points out the necessity for thoroughly examining the noses, ears and throats of all children before speech teaching is undertaken, so that all physical obstacles to hearing and speaking may be removed and also that all remnants of hearing-power may be utilized. ED.

1130

Paralysis of Left Vocal Cord Cured by Salvarsan G. R. SATTERLEE, *Proc. N. Y. Acad. of Med.*, Jan. 24, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1072, Aug., 1912.

1136

Speech Without a Larynx. STEINTHAL, *Med. Korresp.-Bl. d. Wuert. aerztl. Landesv.*, No. 27, 1912.

Very soon after total removal of the larynx for carcinoma the author made his patient practice methodical speech exercises. Through patiently exercising, the man learned in ten weeks to articulate sufficiently well to make himself understood at a short distance. He kept up the methodical exercises and has now developed a loud distinct speech.

ED.

1138

Consideration and Treatment of Some Diseases of Upper Air Passages in Singers and Public Speakers. C. G. STIVERS, *Cal. State Jour. of Med.*, p. 491, Dec., 1912.

Complete rest, use of whispered word method and inhalation of the following mixture (Stiver's) is recommended in cases of chorditis, nodosa or singer's nodes: Tincturae benzoini compositae, 30 gm.; olei pini, 1 gm.; mentholis, 2 gm.; camphorae, 1 gm. Sig.: Add teaspoonful to one pint boiling water and inhale, t. i. d.

Both in examination and treatment the utmost gentleness is urged.

ED.

1143

Adductor Paralysis of the Left Vocal Cord Due to Mediastinal Tumor With Skiagraph. C. D. VAN WAGENER.

Original contribution to THE LARYNGOSCOPE, p. 1033, Aug., 1912.

1151

Case of Branchial Fistula. F. C. ARD, *Proc. N. Y. Acad. of Med.*, March 27, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1150, Sept., 1912.

1153

The Larynx with Special Reference to Intubation with Demonstration on the Living and on the Cadaver. R. W. BEMIS, *Proc. Phila. Laryngol. Soc.*, Feb. 27, 1912.

Abstracted in THE LARYNGOSCOPE, p. 767, May, 1912.

1157

Stab Wounds of Larynx. N. Boljarski, *Beitr. z. klin. Chir.*, p. 335, Feb., 1912.

The author has observed twenty-five cases of stab wounds of the larynx within the last ten years, of which twenty-one were inflicted with suicidal intent. In nine cases the cricoid was injured; the thyroid in seven cases; the thyro-hyoid ligament in seven and the crico-thyroid in two cases. Hemorrhage, asphyxiation, tracheo-bronchitis, pneumonia, pleuresy, laryngeal abcess and edema of the glottis arise as complications. In every one of the author's cases inferior tracheotomy was necessary. Ed.

1167

The New Vienna Clinic for Laryngeal and Nasal Diseases. O. Chiari and Kahler, *Monatschr. f. Ohrenh.*, p. 129, Bd. 46, Heft 2, 1912.

See review number 3164.

1169

Recent Progress in Laryngology. A. Coolidge and D. C. Greene, *Boston Med. and Surg. Jour.*, p. 219, Aug. 15, 1912.

In this article the authors review in turn some of the subjects which have received especial attention in the literature of the past year. They first discuss the more recent theories and treatment for hay-fever, and point to the fact that the work along bio-chemical lines promises the best results. The parallelism with the intolerance of some people for certain foods is pointed out. The condition is called "a local cellular anaphylaxis, in which the cells have acquired the power of digesting within themselves the special proteid to which the sufferer is susceptible."

Next, Killian's method of increasing nasal space by a fracturing outwards and downwards of the inferior turbinated bones without their removal, is noted. Under "etiology of tonsillitis" we are reminded that two forms of this disease are to be distinguished, the one where the infection enters primarily at the tonsil, and the other where the primary entrance is elsewhere and we have a resulting localized eruption in the tonsils from a general constitutional infection. The former type is benefited by operation, while in the latter an operation would be considered at least not necessary. Digby's interesting though not new hypothesis as to the function of the tonsils, is referred to. They are considered as lymphatic structures in the throat analagous to those in the intestines, protecting the body, especially in youth, against invasion. "Being placed in positions in which bacterial invasion especially threatens, these structures seize pathogenic micro-organisms and hold them, in order to arouse a protective auto-vaccination. "In other words, the tonsils are continually practicing a vaccine therapy and in this way more or less immunity is acquired without the actual development of the disease. The removal of the tonsils leaves other similar structures to take up this function, but the theory suggests that they should not be looked upon as useless, especially in children." If an operation be indicated, authorities seem to agree that the tonsil should be enucleated entirely. Reference is made to the greater difficulty and longer and more painful convalescence after the tonsillectomy; and Sluder's method of enucleation with his guillotine, and Beck's and Sauer's modification of his method are briefly discussed.

Under "Vincent's angina" the bacteriology of the disease is first taken up. "The essential feature is the presence in enormous numbers of the fusiform bacillus and a spirochete on a subacute pseudo-membranous and ulcerative lesion.

Keier of Strassbourg is quoted, on his transverse incision for tracheotomy. The skin is incised just below the cricoid for two to three centimeters, transversely. The ready gapping of the wound brings the deeper structures well into view; and favors greater accuracy in dissection. The trachea is entered by a transverse incision between the second and third rings. Besides the greater ease and less bleeding, advantages claimed for this method are the easier insertion and removal of the cannula, the better healing of the wound and the smaller resulting scar, and the less likelihood of secondary infection.

Pfannenstil reported nine cures in fourteen cases of tubercular laryngitis, by the use of potassium or sodium iodid internally and the inhalation of ozone one hour later (when the blood is at its maximum saturation); thus securing the liberation of iodin at the local lesion through chemical action. Where the epithelium is unbroken, Reyn's modification of this method is available. Here the galvanic current is applied locally one to two hours after the ingestion of the iodin salt, and the iodin is liberated locally by the electrolytic action.

The technic of alcohol injections for alleviation of pain in tuberculosis is dwelt upon, and the technic given in detail. As the internal branch of the superior laryngeal nerve is purely sensory and supplies all the upper and lower larynx excepting part of the epiglottis, injection of alcohol along this nerve will stop the pain, at least temporarily, in all but the epiglottic region, and this latter is accessible to operative treatment. The anatomy of this immediate region and the technic of the injection is detailed.

For alleviating the pain in the epiglottis, epiglottidectomy is recommended by Lockard who performed the operation in forty-seven cases. In forty of these the stump healed well, while in the remaining seven the healing was delayed. In only three was there a recurrence.

The rapid advances in bronchoscopy are next dwelt upon by the authors. Killian and his successor in this work, Bruenings' lead, while in America Jackson's method is in vogue. This distinction makes the main line of difference between the European and American schools of bronchoscopy. Bruenings' recent book on the subject with its translation into English gives to us the latest advance in Europe, but it is to be regretted that this and other European authors give so little attention to the "advance in bronchoscopy and esophagoscopy originating in America." Killian's contention is noted, calling attention to the ease with which the larynx and deep pharynx can be seen when the head is allowed to hang down over the edge of a table suspended merely by a tongue depressor.

This most interesting summary closes with a short discussion on whether "colds" are caused by exposure or are contagious in origin.

BERRY (MOSHER).

1170

Laryngeal Sporotrichosis. CORREA, *Semana Med.*, May 16, 1912.

Man, aged 68 years. Cough and dyspnea for about a year. Laryngeal examination: ulcerating tumor of right vocal cord, some infiltration; right cord immovable; rest of larynx normal. Anti-syphilitic treatment of no avail. Operation. Tumor found to be sporotrichosis. Growth recurred and potassium iodid. (120 grains a day) given which reduced growth to a pale cicatrix. Ed.

1171

Laryngectomy for Cancer. G. W. Crile.

Original contribution to The Laryngoscope, p. 1317, Dec., 1912.

1176

Paralysis of the Right Recurrent Laryngeal Nerve from Accidental Trauma. D. B. Delavan, *Med. Rec.*, p. 1028, Dec., 1912.

Two cases are reported, the first of undoubted traumatic origin, the second resulting from an attack of diphtheria, whooping cough, or trauma. The prognosis in such cases is bad, but systematic vocal exercise is of great value. Ed.

1177

Remarkable Case of Chorea Laryngis et Pharyngis. Delie, *Geneesk. Tijdschr. v. Belgien*, April 15, 1912.

Girl of 14 who had suffered from chorea of several muscles for four months. Very peculiar, usually mono-syllabic sounds appeared when she spoke, also whistling and shrieks. When the patient became self-conscious these symptoms were aggravated. Ed.

1182

Leiomyoma Laryngis. Z. Donogany, *Monatschr. f. Ohrenh.*, p. 540, Bd. 46, Heft 5, 1912.

Boy of 11 suffered from hoarseness and dysphagia. A smooth, compact tumor, the size of a hazel-nut of the color of the neighboring tissue obstructed the larynx. Tracheotomy and endo-laryngeal removal with the sling. The tumor sprung from the left superior thyro-arytenoid ligaments. Microscopic examination: leiomyoma. Ed.

1185

Four Cases of Fracture of the Larynx. W. Downie.

Original contribution to The Laryngoscope, p. 16, Sept., 1912.

1187

Chronic Laryngeal Stenosis; Treatment by Specially Devised Tubes. H. Dupuy, *N. Orleans Med. and Surg. Jour.*, Aug., 1912; and *Jour. A. M. A.*, p. 1120, Sept. 21, 1912.

Six cases are reported, all but one under the age of 3. The conclusions are as follows: 1. An affection presenting the distinctive features of exudative inflammatory changes with a narrowing of the respiratory lumen in the sub-glottic and upper tracheal areas is, in most instances, the essential cause of persistent laryngeal stenosis in children. This is what we consider a pathologic entity in itself, and the term "hypertrophic laryngitis" expresses its chief feature. It must, however, be considered as an end-result of some active inflammatory process, which may be of diphtheritic origin. But some other cause, non-diphtheritic in character, may also prove the essential factor. 2. In children, prolonged intubation with a special tube (one with a low retaining swell), using the largest tube possible for the age of the subject, offers in the present stage of our knowledge the best prospects of success in overcoming the stenosis. 3. If repeated and dangerous auto-extubation occur, in spite of the use of special tubes, the fixed intubation tube, made of hard rubber and gold-lined, offers the best safeguard. 4. This hard rubber tube for prolonged intubation is preferable for the reason that incrustations do not occur around the tube and the possibility of ulcerations of the parts, due to contact, is minimized. 5. Tracheotomy not only fails to effect mechanical dilatation in the constricted areas, but it actually invites tracheal cicatricial changes and deformities which will only complicate matters and drive us from "Scylla to Charybdis." Ed.

1191

Diagnosis and Therapy of Laryngeal Carcinoma. J. Fein, *Monatschr. f. Ohrenh. u. Laryngo-Rhinol.*, p. 69, Heft 1, 1912.

Abstracted in The Laryngoscope, p. 1200, Oct. 1912.

1193

The Influence of Certain Glands Having an Internal Secretion on the Development of the Larynx. Gherardo Ferreri, *Monatschr. f. Ohrenh.*, p. 541, Bd. 46, Heft 5, 1912.

The author calls attention to the fact that the study of the voice must not only be considered from the standpoint of the age, sex and nationality of the individual, but that we must also view the question in the light of the changes which may be produced in the larynx by many diseases such as adenoidisms, acromegaly, myxedema or lesions of the thymus.

Experimentally Ferreri castrated some chickens and removed the thymus in others. Microscopically and macroscopically changes were then seen in the larynges, in the musculature and the cartilages. The author admits that definite conclusions cannot be drawn from the small number of experiments as yet done, but believes that a number of the glands have a direct influence on the development of the larynx.

Sonnenschein (Stein).

1195

Case of Primary Tuberculosis of the Larynx. Franceschi, *Clin. Med.*, Jan., 1912.

The author states that in primary tuberculosis of the larynx of a neoplastic vegetable type when the lung is not involved the only rational therapy is total laryngectomy. Ed.

1196

Pathology and Treatment of Diseases of the Larynx. O. Frese, *Med. Klinik*, Jan. 28, 1912.

Abstracted in The Laryngoscope, p. 1346, Dec., 1912.

1197

Prognosis and Treatment of Tuberculosis of the Larynx. W. Freudenthal.

Original contribution to The Laryngoscope, p. 971, July, 1912.

1198

Recurrens Paralysis Due to Mitral Stenosis. B. FREYSTADTL AND J. STRANZ, *Monatschr. f. Ohrenh.*, p. 557, Bd. 46, Heft 5, 1912.

Ortner, in 1897, first called attention to paralysis of the recurrent laryngeal nerve due to cardiac changes following mitral stenosis. According to the authors there have been but five cases (including Ortner's two) described in which autopsy disclosed the direct relationship of the cardiac lesion to the paralysis.

The case here cited showed clinically nephritis, and a broken heart compensation with bicuspid valve insufficiency; paralysis of left recurrent laryngeal nerve.

Autopsy showed pericarditis with some effusion, and an enlarged heart, the hypertrophy being mainly shown in the auricles. The mitral orifice was greatly stenosed, the valve leaflets showing scar tissue and calcification. The left recurrent nerve showed, histologically, decided degeneration. The paralysis was caused by the nerve being firmly pressed against the aorta by the greatly dilated left auricle. SONNENSCHEIN (STEIN.)

1204

Retro-laryngeal Abscess of Streptococcic Origin. O. GLOGAU, *Proc. N. Y. Acad. of Med.*, Jan. 24, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1067, Aug., 1912.

1206

Paralysis of the Left Recurrent Nerve in a Case of Primary Cervical Scoliosis. GOYET AND BLANC-PERDUCOT, *Med. Prac.*, July 24, 1912.

The author has observed paralysis of the left vocal cord in a woman, complicating primary cervical scoliosis with high compensatory dorsal inflection at the left convexity. No lesion of neural axis or of the principal trunk nor mediastinal compression. Clinical and Roentgen examination showed that dorsal deviation had caused a marked displacement of the heart and aorta. Lesion in the left recurrent with paralysis of the corresponding vocal cord is rare. It is due to stretching of the recurrent nerve by the aortic arc deviated from its unusual position because of the vertebral inflection. ED.

1213

Cancer of the Larynx. HOULIE, *Monde Med.*, No. 461, 1912.

As one of the earliest diagnostic symptoms Houlie mentions foul-smelling breath. He discusses the hopeless prognosis in women of 35 to 40 years. Laryngostomy is to be preferred to endo-laryngeal treatment. If the diagnosis be made early good results are obtained with laryngotomy. Total laryngectomy in two stages is also discussed as well as radium treatment. ED.

1215

Case of Basal-cell Epithelioma of the Larynx Two Years After Operation. L. M. HURD, *Proc. N. Y. Acad. of Med.*, Jan. 24, 1912.

1216

Case of Branchial Cyst. L. M. Hurd, *Proc. N. Y. Acad. of Med.*, Jan. 24, 1912.

Abstracted in The Laryngoscope, p. 982, July, 1912.

1218

Congenital Folds in Region of Pyriform Sinus. R. Imhofer, *Ztschr. f. Laryngol.*, p. 259, Bd. 5, Heft 2, 1912.

This condition was found during autopsy. A sort of diaphragm covered both sides of the sinus pyriformis. Ed.

1219

Laryngeal Changes in Pregnancy. Imhofer. *Ztschr. f. Laryngol.*, p. 745, Bd. 4, Heft 6, 1912.

Abstracted in The Laryngoscope, p. 1083, Sept., 1912.

1220

Unusual Case of Papillomatous Leucoplasia of the Larynx. E. Jacob, *Rev. hebd. de Laryngol.*, p. 401, Oct. 5, 1912.

The tumor, the size of an almond covered almost all of the right vocal cord and obscured almost all of the right half of the larynx. It was removed with recovery. The patient was a cigarette smoker and the author quoting Poyet gives this as the probable etiologic cause of the leucoplasia.

1225

Localization of Innervation of Larynx in Cortex of Cerebellum. J. Katzenstein and M. Rothmann, *Passows Beitr.*, p. 380, Bd. 5, Heft 5-6, 1912.

Experimentally produced disorders in the anterior lobe of the cerebellum of dogs showed the following changes in the innervation of the larynx: The vocal cords did not close, and trembled; the outward motion was irregular and did not reach the normal abduction width. The maxillary and lingual muculature became numb. After several days the disturbances decrease in intensity but were still present after several months.

Since the laryngeal center in dogs has been located in the cerebellum we should note whether in cerebellar affections in man a disturbance in the innervation of the vocal cord is apparent. Such a disorder would be a valuable aid in the diagnosis of disease of the anterior cerebellar lobe, especially in enabling early surgical intervention to be undertaken. Ed.

1227

Fracture of the Larynx; Two Cases; Advantage of Tracheotomy. H. Koerbl, *Wr. Klin. Wchnschr.*, Aug. 22, 1912.

Apropos of these two instances Koerbl concludes that in every case in which trauma of the larynx is followed by severe dyspnea and empyema, tracheotomy should be performed even though examination does not reveal fracture. Ed.

1234

Fatal Laryngo-spasm. L. LETO, *Bolt. delle Mal. dell-Orecchio*, p. 49, March, 1912.

Leto gives the clinical history of a fatal case of laryngo-spasm with abduction findings and histological examination of the different organs. The case was not a simply one of laryngeal spasm, for the laryngeal mucosa was thickened, hyperemic and in some places, ulcerated. ED.

1239

Cases Showing the Results of Treatment of Laryngeal Stenosis. H. L. LYNAH, *Proc. N. Y. Acad. of Med.*, May 22, 1912.

Abstracted in THE LARYNGOSCOPE, p. 136, Feb., 1913.

1240

Immobility of Left Side of Larynx Accompanying Cyst of the Thyroid Gland. D. MAC PHERSON, *Trans. N. Y. Acad. of Med.*, Nov. 27, 1912.

Abstracted in THE LARYNGOSCOPE, p. 234, March, 1913.

1242

Case of Pharyngo-laryngeal Glanders in a Man of 30 Years. G. MAHU, *Ann. des Mal. de l'Oreille*, No. 9, p. 284, 1912.

Ulcers appeared in naso-pharynx and larynx seven months after infection from a horse. Eight days after infection pleuro-pneumonia; four weeks later abscesses of thigh and leg with bacillus mallei in the pus, which healed, however. The pharyngeal and laryngeal ulcers were very stubborn to treatment but finally apparently cured. ED.

1248

Historical Data on the Silent Cure. M. MENIER, *Ztschr. f. Laryngol.*, p. 669, Bd. 5, Heft 4, 1912.

Menier claims the priority of this therapy for his countrymen although fully recognizing the great value of Moritz-Schmidt's work. He calls attention to the work of Lasserre on chronic laryngitis (laryngeal phthisis) published in the *Annals de la Medecine physiologique* in 1824. Menier also shows that this treatment was advised by Baillou in the third volume of "Conseils medicaux," 1649. ED.

1249

Malignant Hypernephroma in the Larynx; A Unique Case. K. M. MENZEL, *Arch. f. Laryngol. u. Rhinol.*, p. 265, Vol. 26, Heft 1, 1912.

Because of an accompanying pulmonary affection the growth was at first supposed to be a tuberculoma and was removed with the snare. Histological examination revealed hypernephroma; Roentgen examination showed tumors in the sacrum and in the lung. ED.

1255

Comparative Anatomical Study of the Larynx of the Mammal. J. NEMAI. *Arch. f. Laryngol.*, p. 451, Bd. 26, Heft 3, 1912.

This important contribution on the anatomy of the larynx of the mammal will, no doubt, be of great assistance in determining many of the mooted anatomical and physiological questions concerning the human larynx and its mechanism. The author has made very careful examination and dissections of the larynges of the many classes of mammals. Of the ruminiferous, the deer, giraffe, antelope, gazelle, bull, sheep, horse, and hog minute descriptions are given.

The author draws a comparison of the topographical position, the shape and variation of the arytenoid cartilages, together with their ligaments and modifications in the musculature of the larynx. A series of interesting illustrations and a valuable bibliography accompany the monograph. GOLDSTEIN.

1256

Case of Laryngocele (Aerocele). Z. NOURY, *Arch. intern. de Laryngol.*, p. 806, Nov.-Dec., 1912.

The case reported is in a man of 43 years. Operative intervention resulted in a cure within three weeks. In this instance the sac was dilated and respiration difficult which necessitated intervention. The etiology is attributed to a cystic dilatation of a ventricular mucous gland which opened and formed the laryngocele. No histological examination of the wall of the sac was made. ED.

1257

Distribution of the Nerve Fibers of the Inferior Laryngeal in its Central Trunk and End Filaments. A. ONODI, *Monatschr. f. Ohrenh.*, p. 65, Heft 1, 1912.

The greater part of the fibers of the ansa Galeni enter the trunk of the inferior laryngeal nerve and thence the trachea; only a few enter the larynx at the bifurcation. A small portion come from the sympathicus or from the other side. ED.

1271

Remarkable Case of Foreign Body in the Larynx. A. ROOZENDAAL, *Ned. Tijdschr. v. Geneesk.*, April 20, 1912.

Abstracted in THE LARYNGOSCOPE, p. 221, March, 1913.

1272

Aid in the Diagnosis of Superficial Defects of the Mucosa. ALBERT ROSENBERG, *Monatschr. f. Ohrenh.*, p. 614, Bd. 46, Heft 5, 1912.

Taking his cue from the action of fluorescin in staining the cells in corneal ulcers, Rosenberg has employed a 2 per cent alkalin solution of this substance in the diagnosis of superficial erosions of the laryngeal mucosa. Fluorescin has a selective action in that it penetrates and stains all epithelium in the eroded area, or epithelium which is dead and desquamated, but does not impart this green color to living intact epithelium. This action on desquamated epithelium can be nicely seen by applying the solution to a tongue which is somewhat "coated' and noting the discoloration which takes place. SONNENSCHEIN (STEIN).

1278

Angioma of the Larynx. G. RYERSON, *Can. Med. Assn. Jour.*, Feb., 1912.

The writer has met with only one case of angioma of the larynx in thirty years experience, and refers to seven others reported in the literature.

Histologically, the cavernated tissue in angioma is lined with a single layer of epitheloid cells, the vascular spaces may be filled with laminated clots, the surface partakes of the epithelium of the part, and the stroma may undergo mucoid degeneration, giving the growth a mixed character. Angioma cavernosa presents the appearance of a rasberry-like mass, and may be sessile or pedunculated, may appear in any part of the larynx, but is most common on the vocal cords.

The patient in question complained of difficulty and oppression of breathing at times, but with no pain, hoarseness or cough. There was no family history of tumors. The difficulty began a year ago with stiffness and pain in the tongue and occasional difficulty in breathing, but not in deglutition.

A bluish purple, lobulated mass, presenting the appearance of a small raspberry, was present on the left side on the anterior surface of the arytenoid, on the ventricular band, and along the external margin of the vocal cord. On the anterior surface of the right arytenoid a similar, but smaller growth was present. The growth disappeared entirely under "radium treatment" followed up by the galvano-cautery, and now after the lapse of three years, there are but two small cicatricial nodules remaining.

WISHART.

1280

Fracture of the Larynx. W. E. SAUER, *Jour. Mo. State Med. Assn.*, p. 83, Sept., 1912.

Boy of 14 kicked by horse. The author saw the patient six weeks after the injury. Tracheotomy followed by laryngo-fissure. Soft rubber tube inserted into larynx and wound packed with gauze which was changed daily. Size of tube also increased. After two months external wound closed and largest size O'Dwyer tube inserted. Patient recovered with normal respiration. Though his voice was hoarse he was able to make himself understood. Sauer discusses the possible causes of fracture of the larynx; the variations in the normal consistency of cartilages; the types and location of the fracture; symptoms; diagnosis; prognosis; and treatment.

ED.

1283

Multiple Amyloid Tumor of the Larynx and Pharynx. P. SECKEL, *Arch. f. Laryngol.*, p. 1, Vol. 26, Heft 1, 1912.

This tumor is interesting because of its multiplicity and its localization on the uvula, pharyngeal wall, plica aryepiglotticae, under the incisura interarytenoidea and the right ventriculus Morgane. Seckel also reviews the literature.

ED.

1286

Scleroma of the Larynx. P. F. SONDERN, *Proc. N. Y. Acad. of Med.*, Jan. 24, 1912.

Abstracted in THE LARYNGOSCOPE, p. 986, July, 1912.

1288

Case of Total Laringectomy in Two Stages. T. STORI, *Arch. Ital. di Otol.*, p. 150, March, 1912.

The modification in this technic introduced by Stori is that the larynx is at first left *in situ* (it is separated from the pharynx and membrane hyoidra but not from the trachea); thus no secretions enter the trachea and the possibility of pneumonia is averted; cough is avoided, and after two days fluids may be swallowed easily and without danger. ED.

1290

Cutaneous Emphysema After Injury to Larynx. F. J. TEN KATE, *Med. Tydschr. v. Geneesk.*, Jan. 13, 1912.

A workman fell from a height and struck his throat on a nail. In the beginning but a small wound was visible around the cricoid cartilage; after an hour, however, the neck suddenly began to swell; difficulty in breathing. Face, neck, chest, stomach, scrotum intensely swollen; eyes entirely closed. Temporary incision to empty air from tissues, laryngeal wound also enlarged; immediate tracheotomy. From the third to the eleventh day severe erysipelas; cure on sixteenth day. ED.

1291

Intrinsic Carcinoma of the Larynx. ST. C. THOMSON, *Brit. Med. Jour.*, Feb. 17, 1912, and *Med. Presse and Cir.*, Feb. 21, 1912.

Ten cases treated from 1900-1910 are reported in detail. All the patients were men of from 43 to 68 years. Laryngo-fission was performed on every case; total removal was necessitated in one case because of recurrence. Five cases are still alive, the longest interval that has elapsed since operation being 7½ years. Hoarseness was the most prominent symptom; in no case were the cervical glands affected. The diagnosis was substantiated in every case by histological examination. ED.

1296

Histologic Examination of Laryngeal Cartilage in a Cadaver Buried Two Months. VERGER, *Gaz. hebd. des Sci. Med. de Bordeaux*, No. 27, 1912.

A medico-legal autopsy was performed on a cadaver buried for sixty-five days. A histological examination of the larynx showed that the cartilaginous cells could still be entirely colored by the methods employed in normal and pathological histology. ED.

1297

Personal Statistics in Eleven Cases of Laryngostomy with Dilatation. M. C. VIANNAY, *Bull. d'Oto-Rhino-Laryngol.*, p. 177, May, 1912.

This procedure was carried out in eleven of the author's cases of laryngo-tracheal stenosis following long-continued carrying of the tracheotomy tube. The operation consists of two stages; the laryngostomy proper, and the dilatation with repair of the stoma which covers a period of about six months. ED.

1298

Two Cases of Stab Wounds of the Larynx. A. P. VOISLAWSKY, *Trans. N. Y. Acad. of Med.*, Nov. 27, 1912.

Abstracted in THE LARYNGOSCOPE, p. 232, March, 1913.

1300

Relative Frequency of Pulmonary Tuberculosis and Other Diseases of the Respiratory Tract in Jews and Gentiles. A. VON SOKOLOWSKI, *Gaz. lek., and Ztschr. f. Tuberculose*, 1912.

The second part of this extensive treatise is devoted to a comparative study of the frequency of tuberculosis of the pharyngo-laryngeal cavity in the two races. The statistics show that the affection is more frequent in the Jews (60 per cent) than in Gentiles (40 per cent). Ed.

1301

Ossification and Subsequent Expulsion of Both Arytenoid Cartilages; Causes Unknown. A. I. Weil.

Original contribution to The Laryngoscope, p. 1124, Sept., 1912.

1302

Another Case of Amyloid Tumor of Larynx. H. Williamann, *Arch. f. Laryngol.*, p. 395, Bd. 26, Heft 2, 1912.

This case was cured after two applications of the Roentgen rays. Ed.

1307

Tracheal Syphilis with Perforation into Esophagus. E. Basch, *Trans. K. Vereins d. Aerzte in Budapest*, No. 7, 1912.

Patient was sent to author for salvarsan treatment because of a broken down gumma of the naso-pharynx and pharynx. Twenty-four hours after intravenous injection (0.40), death. Post-mortem examination showed that death resulted from an unrecognized tracheo-esophageal fistula due to the breaking down of the gumma which causes putrid bronchitis and gangrene of the lung. Ed.

1321

Neoplasms in Trachea. W. Doederlein, *Arch. f. Laryngol, u. Rhinol.*, p. 345, Bd. 26, Heft 2, 1912.

Case 1: Papilloma after cricotomy. *Case 2*: Metastatic carcinoma in primary tumor of the uterus. Ed.

1330

Six Cases of Foreign Bodies in Trachea and Bronchi. Guisez, *Bull. d'Oto-Rhino-Laryngol.*, p. 160, May 1, 1912.

In this paper Guisez reports his experience with bronchoscopy during the past year. The fact is again brought out that often the bronchi are very tolerant of metallic or inorganic foreign bodies, while others cause infectious broncho-pulmonary complications. Ed.

1331

Bone and Cartilage Growth in Mucosa of the Trachea. Ishio Haga, *Berl. klin. Wchnschr.*, March 25, 1912.

This is the author's report of a second case of this condition found post-mortem. In the mucosa of the anterior wall of the larynx there were found three pea-sized crateriform carcinomatous tumors. Beginning 1 cm. from the upper rim of the trachea and extending down to the bifurcation are sieve-like bony and cartilaginous formations. The possible relation of the latter bodies to chronic inflammatory reactions is considered.

Edgar (Goldstein).

1332

Permanent Wheezing in a Young Infant Due to Simple Tracheo-bronchial Adenopathy. Halipre and Carpentier, *Rev. Med. de Normandie*, Feb. 25, 1912.

Since the age of 3 months until death following broncho-pneumonia complicating measles the child had a persistent wheezing due, it was thought, to hypertrophy of the thymus. The mother had presented a similar condition, when young, which gradually disappeared. Neither during life nor at autopsy could any tubercular lesions be found, but a very pronounced inter-tracheo-bronchial adenopathy involving the tenth pair and the recurrent nerve.

Persistent wheezing is exceptional and usually ends fatally in infants.
Ed.

1335

Fungous Tracheo-bronchitis. G. H. Hoxie and F. C. Lamar, *Jour. A. M. A.*, p. 95, Jan. 13, 1912.

Two cases are reported, in the one the symptoms were those of a tracheo-bronchitis with spasmodic cough, in the second hemorrhage was present. Examination of the sputa revealed the presence of fungous stalks; attempts to grow this, however, proved futile. The possible source of infection in both these cases was probably the food, since both patients were vegetarians. The authors feel that this condition is more frequent in America than our literature warrants. Ed.

1336

Dilatation of Bronchial Strictures; Notes on the Clinical Pathology of Bronchiarctia. C. Jackson, *Jour. A. M. A.*, p. 1123, Sept. 21, 1912.

Two cases due to obstructing foreign bodies treated successfully by divulsion are recorded. In one case the foreign body had been in the bronchus seven years and in the other case ten years. The strictures were firm, rigid and of very small lumen. The foreign body was found at the top of the abscess-cavity embedded in fibrous tissue external to the bronchial wall through which they had penetrated. The author strongly advocates divulsion in the treatment of bronchiarctia and details its advantages. Ed.

1338

Membrane Obstructing Trachea After Tracheotomy. K. Justi, *Muench. Med. Wchnschr.*, Sept. 3, 1912.

Difficulty in decanulement after superior tracheotomy is usually due to granulations and displacement of cartilaginous rings, which in turn causes a stenosis. In one case tracheotomy had to be performed again after decanulement because of dyspnea. A circular membrane was found occluding the trachea. Three months later decanulement after resection of this membrane and cauterization of some granulations. Again dyspnea; Dupin's cannula left in situ six weeks; recovery. The scar of a diphtheritic ulcer rather than the tracheotomy tube itself probably caused the diaphragm. Ed.

1341

Primary Carcinoma of the Trachea. P. Kaunitz, *Wr. Klin. Wchnschr.*, Sept. 19, 1912.

To the forty-five cases of primary tracheal carcinoma hitherto reported three further cases are added. Ed.

1342

Advantages of Transverse Tracheotomy. H. Keiner, *Monatschr. f. Kinderh.*, Vol. 10, No. 12, 1912.

Keiner feels that in transverse tracheotomy the functioning of the air passages is interfered with less, the procedure is safer and the scar less apparent. He tracheotomizes every case of descending membranous croup especially when complicated by measles. Ed.

1346

Experimental Pneumonia Produced by Intra-bronchial Insufflation. R. V. Lamar and S. J. Meltzer, *Jour. Exper. Med.*, Feb., 1912; and *Cntrlbl, f. Allg. Path. u. Pathol, Anat.*, April, 1912.

Pure cultures of pneumococci were introduced deep into the bronchi of forty-two dogs with a mortality of 16 per cent. The fatal cases were those in which a larger quantity of the culture had been introduced, and closely resembled lobar pneumonia in man. The other cases showed pathologic and bacteriologic findings similar to those in man. The animals were not selected nor prepared. Post-mortem findings in all the animals showed typical lesions of fibrinous pneumonia, with involvement of greater part of lobe. The fatal cases also presented pericarditis, empyema, and bacteriemia. Ed.

1355

Primary Carcinoma Arising from the Bronchus in a Tubercular Lung. Milne McIntyre, *Glasgow Med. Jour.*, Aug., 1912.

At the post-mortem examination on a male patient, 67 years of age, a primary carcinoma was found arising in the upper division of the left bronchus, limited to a small area of adjacent lung, and with no secondary deposits outside the lobe of lung affected. The histological characters of the growth suggested that it had taken origin from the lining epithelium and submucous glands of the bronchus. The condition was suspected during life and the case was worthy of note on account of the association of anthracosis, chronic tubercle, and a phthisical cavity with primary cancer. Probably primary carcinoma of bronchus or lung is commoner than statistics would suggest. Guthrie.

1362

Substitutes for the Trachea. E. Schepelmann, *Arch. f. klin. Chir.*, Bd. 98, No. 1, 1912.

The author prepared an artificial trachea composed of piece of bone-periost which he sewed around a perforated glass tube somewhat larger in diameter than the lumen of the trachea, making of the periost an inner surface and of the bone fragments an outer surface. Eight to ten weeks following transplantation the trachea was redissected, the artificial larynx mobilized, and sewed into position after removal of the glass tubing.

Goldstein.

1367

Bacterial Invasion of Blood and Cerebro-spinal Fluid by Way of Lymph Nodes. E. E. SOUTHARD AND M. M. CANAVAN, *Boston Med. and Surg. Jour.*, p. 109, July 25, 1912.

The conclusion is again emphasized that post-mortem cultures from the cerebrospinal fluid are more likely to yield growths than cultures from the blood. The cerebrospinal fluid remained more frequently positive than the mesenteric or bronchial lymph nodes. The retroperitoneal lymph nodes were more frequently invaded than either the blood or cerebrospinal fluid. ED.

1374

Neglect of the Trachea. J. A. THOMPSON.

Original contribution to THE LARYNGOSCOPE, p. 1031, Aug., 1912.

1385

Removal of Foreign Body from a Bronchietatic Cavity. S. YANKAUER, *Proc. N. Y. Acad. of Med.*, May 22, 1912.

Abstracted in THE LARYNGOSCOPE, p. 138, Feb., 1913.

1386

Three Cases of Foreign Body in the Bronchus. S. YANKAUER.

Original contribution to THE LARYNGOSCOPE, p. 1218, Oct., 1912.

1400

Remarks Based on the Analysis of 100 Consecutive Cases of Stricture of the Gullet. WALKER DOWNIE, *Glasgow Med. Jour.*, May-June, 1912.

The subject of stricture of the esophagus, both organic and functional, is dealt with in this paper a some length. The cases met with by the author are classified as follows: (1) Spasmodic stenosis with no organic disease, 24 per cent. (2) Fibrous stricture with no history of injury, 20 per cent. (3) Cicatricial stricture with a history of injury or ulceration, 25 per cent. (4) Malignant stenosis, 28 per cent. (5) Congenital narrowing of the gullet, 3 per cent. Of the 25 cases of cicatricial stricture it is stated that 11 were due to syphilis, 9 of the patients being women. The author has for many years held the opinion that syphilis of the esophagus is much more frequent than is generally supposed. He does not state fully the data on which he bases his diagnosis in these cases, nor do the details of the only case which he describes carry conviction as to its syphilitic nature. GUTHRIE.

1402

Case of Pulsion Diverticulum of the Esophagus. F. EHRLICH, *Arch. f. Verdauungskr.*, p. 403, Vol. 18, 1912.

Man of 28 complained for two weeks of heavy, persistent pain in the epigastrium after eating; for some time previous discomfort and retching of mucus. Stomach tube met resistance when it almost reached stomach and a small quantity of bread was brought up which, though soft, showed no signs of digestion nor gave reaction to Congo papers. Patient said he had eaten this bread the previous evening. A larger tube passed into stomach brought up bile-stained contents with no food. By means of the esophagoscope a transverse gaping hole, on the front wall of the esophagus was seen, full of food. The diverticulum could hold about a teaspoonful of food.

Though a pulsion diverticulum the author holds its origin was probably from traction of a contracted tubercular gland. Ed.

1407

Some Esophageal Cases. S. A. Friedberg.

Original contribution to The Laryngoscope, p. 58, Jan., 1912.

1414

Emergency Esophagotomy. H. Hans, *Muench. Med. Wchnschr.*, June 4, 1912.

After reporting a case of foreign body in the esophagus and discussing the advantages of transverse tracheotomy the author concludes: The transverse skin incision is simpler and safer. The trachea acts like a splint and protects the sutured esophageal incision and prevents traction diverticle. Tracheotomy inferior transversalis is not a good procedure. Ed.

1416

Idiopathic Spasm of the Esophagus as a Common Diagnostic Error. Wm. Hill, *Jour. f. Laryngol. Rhinol. and Otol.*, p. 76, Feb., 1912.

Hill contends that purely functional tonic spasm of the gullet, not associated with inflammatory tumefaction, is a condition often heard of, but never seen. In support of this he states (1) that his own endoscopic and radiographic observations on the esophagus have failed to show any cases of spasm of a really unyielding nature, even when secondary, and that the testimony of others to the contrary when analyzed is inconclusive; (2) an actual anatomical examination by McAlister and verified by others fails to show any muscular sphincter at the cardiac end of the esophagus. The crico-pharyngeus muscle cannot be considered in this discussion because it is a part of the pharynx, and proof is yet to be submitted that the so-called "phreno-spasm" has actually occurred apart from spasm of other portion of the diaphragm. Functional paralysis is usually pharyngeal paresis. The whole subject needs exact investigation. Edgar (Goldstein).

1418

Stricture of the Upper End of the Esophagus. E. M. Holmes.

Original contribution to The Laryngoscope, p. 1228, Oct., 1912.

1420

Perforation of Esophagus by Foreign Body; Four Cases. A. T. Jurasz, *Med. Klinik.*, Aug. 4, 1912.

In the case of a woman of 53 years physicians perforated esophagus by pushing into stomach a small piece of bone which had lodged in the upper part of the esophagus. Result fatal.

Two of three other cases in the same clinic were saved by opening the thorax and esophagus. Jurasz finds six fatalities in fifteen cases recorded. Ed.

1422

Phlegmon from Foreign Body in the Esophagus. F. KAREWSKI, *Berl. klin. Wchnschr.*, p. 1021, May 27, 1912.

The author points out the especial danger following the swallowing of sharp pointed objects which frequently puncture important vessels or cause sloughing of infective infiltrations, while foreign bodies of large size do little harm. Occasionally the patient is unconscious of having swallowed anything. One man aspirated a small metallic hook; esophagoscopy revealed a small bleeding wound to the right of the esophagus; X-ray and digital finding negative. After three days the dyphagia and fever disappeared. Five days later the patient passed the hook. In another case the patient felt he had swallowed a chicken-bone; X-ray examination showed a shadow at the aortic arch. The next day patient felt better.

Three weeks later, dysphagia and pains in throat, followed by retching and dyspnea. Diagnosis of retro-pharyngeal sloughing made and operation undertaken. At the level of the first dorsal vertebra a foul-smelling abscess containing a thin, bent piece of wire, 2 cm. long was located. Abscess was drained and wound healed after a thin layer of necrotic tissue was cast off. Recovery. ED.

1423

Stricture and Diverticula of the Esophagus. G. F. KEIPER.

Original contribution to THE LARYNGOSCOPE, p. 1127, Sept., 1912.

1427

Congenital Atresia of Esophagus; Study of Development of Human Trachea. M. KONOPACKI, *Cntrlbl. f. Allgem. Pathol. u. Pathol. Anat.*, May 15, 1912.

Konopacki reports in detail a case of atresia of the esophagus associated with atresia ani and other defects. The esophagus extended to about the eighth or ninth cartilage ring of the trachea, at which point it ended in a blind pouch. By means of diagrams the author shows the probable formation of this anomaly, i. e., that it is an incomplete separation along the "Anlage" of the esophagus, trachea, and bronchi, and not an obstruction or atrophy.—EX.

1437

Foreign Body in Esophagus; Escape Into Stomach After Ineffectual Esophagotomy. FRANK W. MURRAY, *Ann. of Surg.*, April, 1912.

This case, shown at a meeting of the New York Surgical Society, January 24, 1912, was one of a man of 48 years; foreign body, a gold plate with three artificial teeth. External esophagoscopy few hours after accident. Bougie introduced through wound and plate pushed into stomach. Uneventful recovery. PACKARD.

1442

Esophageal Obstructions with Special Reference to Carcinoma. H. S. PLUMMER, *Jour. Lancet*, Jan. 15, 1912.

Plummer discussed the diagnosis and therapy. He holds that the esophagoscope, bougie and radiograph are the valuable technical methods of examination. Plummer details the various steps in the treatment of the stenosis. In some cases of carcinoma esophagectomy with a gastrostomy is indicated. Ed.

1453

Twenty-six Cases of Cicatricial Stenosis of the Esophagus. Sargnon, *Prov. med.*, Jan. 27, 1912.

Two cases were congenital, one followed spasm, one was an ulcero-cicatricial stenosis consecutive to scarlatina, one due to tuberculosis, and all the others resulted from swallowing caustics. Esophagoscopy has made the prognosis better. Sargnon discusses the treatment at length. Ed.

1454

Hemorrhages from Esophageal Varices. F. Schlaefke, *Wr. klin. Rundschau.*, Nos. 26-27, 1912.

The autopsy findings in this fatal case of hemorrhage from esophageal varices were interesting in that no congestion in the vena portae was evident. Ed.

1468

Congenital Atresia of Esophagus with Esophago-tracheal Fistula. F. R. Zeit, *Jour. Med. Research*, Sept., 1912.

Based upon the fact that no other associated malformations were present in the author's case the hypothesis is advanced that both the atresia and the fistula are due to a faulty embryonic anlage of the lower limbs of the lateral ridges which in the three weeks embryo begin to separate the trachea from the esophagus. Inflammatory processes are excluded. Ed.

1478

Asthma in Children. H. E. Knopf, *Berl. klin. Wchnschr.*, Aug. 12, 1912.

All of the five cases were cured. The treatment embraces physical, dietetic, medicinal, physchic, environmental and gymnastical. In regard to the last mentioned Knopf states that in asthma the thorax attempts inspiration at the same time that the abdomen attempts expiration, and correction of these muscular disorders is very beneficial. Often at puberty the asthma disappears. Ed.

1492

Bean in Bronchus of Child of 5 Years Removed by Lower Bronchoscopy. E. Decressac and R. J. Pouget, *Arch. intern. de Laryngol.*, p. 507: March-April, 1912; and *Jour. de Med. de Bord*, No. 2, 1912.

Child of 5 years swallowed a bean; immediate spasms of suffocation, cough and cyanosis. Tracheotomy and exploration of the trachea, but the foreign body was not seen. After exploring the bronchi several times a bean was perceived in the left bronchus near the bifurcation. It was seized with forceps and brought to the bifurcation where it suddenly became detached and dropped into the right bronchus. It was seized anew and removed through the tube. Because of the duration of the bronchoscopic procedure the tracheal cannula was left in situ until the fourth day. Ed.

1493

Tack in Left Bronchus Removed by Bronchoscopy; Recovery. G. De la Roche and J. Molinie, *Le Larynx*, Jan.-Feb., 1912.

Extraction was first attempted by means of the electro-magnet but proved of no avail since the tack was firmly lodged and was surrounded by granulation tissue. The attempts at removal were made twenty-nine days after aspiration of the foreign body. Tracheotomy was performed and the body easily removed through the wound. Ed.

1494

Bronchoscopic Diagnosis of Syphilis of the Lower Air Passages. A. Denker, *Deut. Med. Wchnschr.*, Jan. 4, 1912.

Man of 30 had symptoms of stenosis; pharynx showed positive signs of an old luetic condition but no laryngeal stenosis found; laryngeal mirror showed no conditions in the trachea down to the bifurcation which could account for the dyspnea. Physical and Roentgen examination showed changes in the lung which could be interpreted as tubercular. It was only by means of bronchoscopic examination that innumerable ulcers were recognized in the trachea as well as severe stenosis of the left main bronchus, and the diagnosis of syphilis confirmed. Salvarsan injection produced good results but patient succumbed to intercurrent pneumonia of the lower right lobe and empyema of the pleural cavity before the author had a chance to carry out his intention of systemic dilatation to relieve the bronchial stenosis. Ed.

1495

Anesthesia in Bronchoscopy. A. Ephraim, *Arch. intern. de Laryngol.*, p. 690, May-June, 1912.

Cocain is only used when absolutely necessary. Otherwise alypin (5 per cent) + adrenalin is used to pinsel the throat and then 6-18 drops as a spray for the larynx. Then the larynx and trachea are powdered with chininum muriatricum plus urea in a one per cent solution by means of the author's specially devised spraying apparatus. Ed.

1496

Laryngoscopy With Mouth Closed. T. S. Flatau, *Stimme*, p. 161, March, 1912.

The principle of Flatau's apparatus is similar to that of Hays and probably slightly ante-dates his. Flatau claims that by his method details are made very much more distinct and the entire technic easier. The instrument recommended for this method can also be used with the mouth open. Ed.

1506

Report of a Case of Aspiration of Silver Tracheotomy Cannula. J. G. Hunt, *Ann. of Otol.*, p. 355, June, 1912.

Patient tried to remove her cannula for cleansing but the collar became detached and it receded into trachea, monentary spasm; but patient immediately introduced a second tube and suffered no further inconvenience. X-ray picture showed cannula located in left lower quadrant of the heart shadow. Tracheal wound enlarged, trachea cocainized and

Jackson (7 mm.) bronchoscope introduced into left bronchus. At 6 cm. beyond the bifurcation the edge of the tube was found and easily removed. One-third of the edge was overlapped by edematous mucosa. Ed.

1507

Tacks and Nails in the Air Passages; Bronchoscopy. E. F. Ingals, *Jour. A. M. A.*, p. 467, Feb. 17, 1912.

Three cases are reported which point out the tolerance of the air passages for foreign bodies, and that in cases of dyspnea one should be prepared at any moment to do a tracheotomy. Ed.

1508

Anesthesia for Peroral Endoscopy. C. Jackson.

Original contribution to The Laryngoscope, p. 1208, Oct., 1912.

1509

Laryngeal, Bronchial and Esophageal Endoscopy. C. Jackson.

Editorial in The Laryngoscope, p. 130, Feb., 1912, and p. 765, May, 1912.

1510

Curious Mishap During a Bronchoscopic Examination. R. H. Johnston.

Original contribution to The Laryngoscope, p. 1136, Sept., 1912.

1512

Direct Laryngoscopy in the Removal of Laryngeal Tumors. R. H. Johnston.

Original contribution to The Laryngoscope, p. 1214, Oct., 1912.

1514

Suspension Laryngoscopy. G. Killian, *Arch. f. Laryngol.*, p. 277, Bd. 26, Heft 2, 1912, *Deut. Med. Wchnschr.*, No. 13, 1912, and *Berl. klin. Wchnschr.*, March 25, 1912.

In his work on the cadaver Killian noticed that he could obtain a view of the entire larynx and part of the trachea when the head was allowed to hang over the edge of the table suspended merely by a tongue spatula fastened by extension to a frame attached above. He applied the same method in work on his patients with excellent results. Ed.

1517

Esophagoscopy in the Removal of Foreign Bodies from the Esophagus. R. McKinney.

Original contribution to The Laryngoscope, p. 1222, Oct., 1912.

1537

Method of Radium Treatment of Upper Air Passages, Trachea and Esophagus. G. L. Albanus, *Deut. Med. Wchnschr.*, April 25, 1912.

The radium is usually placed in an oval, medal-form capsule. Albanus fully describes his method of applying it and his manner of intensifying the rays. The capsule is fixed by means of a Michel clamp and a fixator especially designed by the author for this purpose. Good results are reported. Ed.

1539

Intra-tracheal Insufflation Anesthetization. R. Alessandri, *Policlin.*, p. 1333, Sept. 8, 1912.

Case 1: Young man with sarcoma of naso-pharynx, orbit and maxillary sinus which had recurred twice. By employing Meltzer's technic the operation was safely and radically performed (using 100 cc. of ether) and the patient cured to date.

Case 2: Boy of 14 years in stupor due to tumor in same region as in Case 1. Though this case terminated fatally, yet the regularity of the pulse and breathing throughout the operation proved the advantages of Meltzer's technic. Ed.

1540

Laryngeal Helio-therapy. R. Alexandre, *Arch. intern. de Laryngol.*, p. 388, March-April, 1912.

Alexandre employed Sorgo's method of helio-therapy in the treatment of laryngeal tuberculosis in the sanatorium in Dumarest, with good results. He pronounces it the best treatment available. By means of a special instrument devised by the author the patient is enabled to treat himself. Ed.

1541

Preparation of a Bronchitis Vaccine. W. E. M. Armstrong, *Lancet*, May 18, 1912.

Sputum is placed in an ordinary wire-mesh tea strainer previously sterilized. Water from the tap forcibly drives the thinner and more soluble salivary elements through the meshes, leaving the thicker more gelatinous bronchial secretion, from which cultures may be made in the usual manner. Edgar (Goldstein).

1543

Injection of Alcohol for Relief of Disturbances in Swallowing in Laryngeal Tuberculosis. F. Bertran and Castillo, *Siglo Med.*, Vol. 59, p. 594, 1912.

The authors report six cases in which Boncour's technic for this injection was successfully employed. The anesthesia lasted from twenty days up to a month. In six other cases Hoffmann's method was used but this technic is painful and the anesthesia induced lasts only a few hours or days. Ed.

1544

Roentgen Ray Localization of Foreign Bodies. J. E. Blake, *N. Y. State Jour. of Med.*, Jan., 1912.

Blake has based his conclusions on the physical law that light travels in a straight line and also on the geometrical hypothesis that the corresponding sides of similar triangles are proportional to each other. Ed.

1545

Methods of Anesthesia and Analgesia Employed for the Dysphagia of Laryngeal Tuberculosis. P. Boncour, *These de Paris*, 1912.

Instillation and insufflation are but palliative measures; Bier's anesthesia is usually attended with great difficulties; radio-therapy requires special instruments and the results are uncertain. For injecting the superior laryngeal nerve the author prefers alcohol to cocain or novocain. He also suggests using alcohol injection in dysphagia due to other cause, as for instance in laryngeal cancer. Ed.

1546

Nasal Treatment of Asthma. P. Bonnier, *Arch. gen. de Med.*, March, 1912.

Seventy-five out of the hundred cases of bronchial asthma which Bonnier treated in this manner were cured and the remainder greatly benefited. Bonnier localizes a sensitive area in the mucosa of the anterior portion of the nasal cavities; this he cauterizes lightly. Usually a sudden fit of sneezing or cough or an asthmatic paroxysm follows this cauterization, but when it subsides permanent relief from the asthmatic attacks generally results. Ed.

1547

New Method of Fixing Trachea to Skin in Total Laryngectomy. R. Botey, *Arch. intern. de Laryngol.*, p. 828, May-June, 1912.

To prevent shriveling Botey proposes to cut out a half-moon shaped piece of skin (10-15 mm. wide) to the right and left of the tracheal fistula, 10 or 12 mm. from its edges. Cicatricial retraction will insure a permanent width of the tracheal opening. Ed.

1550

Treatment of Bronchitis in Stout and Elderly. H. Campbell, *Clin. Jour.*, p. 33, Oct. 23, 1912.

Campbell urges the employment of more common sense and less drugs in the treatment of bronchitis. He outlines treatment for this affection medical and otherwise in both obese subjects and those of advanced age. Ed.

1555

Warning in Regard to Intra-tracheal Insufflation Anesthesia; The Necessity of a Safety Valve. F. J. Cotton and W. M. Boothby, *Boston Med. and Surg. Jour.*, March 28, 1912.

A pressure of over 10 mm. Hg. is unjustifiably dangerous in that it interferes with the circulation by preventing the filling of the right heart. For this reason Boothby adopted the mercury safety valve which enables any excess of pressure over 10 mm. to escape by bubbling through the mercury. Ed.

1556

New Method of Laryngeal Intubation. F. Criado and Aguilar, *Rev. de Med. y Cir. Prac. de Madrid*, Bd. 36, No. 1210, 1912.

The finger which serves as a guide is introduced into the mouth, on the right side, until the tip of the finger strike the pharynx. The finger is then bent forward where the arytenoid cartilage is encountered and the epiglottis lifted. The finger thus serves as a guide for the introduction of the tube without in any way obstructing the larynx. The respiration of the child is not interfered with. Ed.

1563

Non-surgical Treatment of Malignant Laryngeal Tumors. F. EGIDI, *Boll. delle Mal. dell'Orecchio*, p. 1, Jan., 1912.

Egidi reports on two cases which he has successfully treated by injections according to Fichera's method. ED.

1568

Relief of Pain in Advanced Tuberculosis of the Larynx by Means of Injections of Alcohol into the Internal Laryngeal Nerve. G. FETTEROLF, *Ann. of Otol.*, p. 128, March, 1912.

Fetterolf has carried out the technic of injecting alcohol into the internal laryngeal nerve in fifteen cases and feels that the procedure is without untoward results. It can be repeated if necessary, though the first injection usually produces the desired results in ninety per cent of the cases.

The nerve is located by means of a tender spot in the lateral region of the thyro-hyoid space. The larynx is held between the thumb and fingers of the left hand, and the needle introduced vertically through the skin, then it is pushed to a greater depth and moved around to elicit a pain in the ear which is supposed to result when the needle comes into contact with the nerve. (The author himself did not always find this sign). In all, from 20-25 minims of ethyl alcohol was injected at one time; if the dose had to be repeated a similiar amount was used. ED.

1570

Further Experience with Endo-bronchial Therapy of Asthma. W. FREUDENTHAL, *Jour. A. M. A.*, p. 1108, Sept. 21, 1912.

Every possible reflex cause, and gross lesions in the nose, throat, uterus, digestive organs, etc., should be sought out and treated. If, however, this therapy is without effect direct local applications to the asthmogenous spots in certain parts of the bronchial ramification should be made. The author holds that over fifty per cent of asthmatic cases treated intra-bronchially are cured. ED.

1576

Direct Injection of Medicated Oil into Bronchi or Lungs. G. GUISEZ AND G. STODEL, *Presse Med.*, Sept. 18, 1912.

Under local anesthesia the authors introduce the cannula beneath the cords and thus inject the medication. A slight fit of coughing was the only reaction.

By animal experimentation it has been determined that injected colored matter penetrated into the air tract in fifteen minutes, and into the external surface of the lung in one hour. The trachio-bronchial ganglions were colored in fifteen minutes.

Experience showed that as much as 20 ccm. of the medicated oil could be injected in man with impunity. After eight or nine injections tracheal and tracheo-bronchial affections were rapidly relieved. ED.

1577

Local Application of Radium in Cancer of Esophagus. GUISEZ, *Soc. de Chir. d. Paris*, April 26, 1912.

Guisez' experience covers 29 cases all of which were diagnosed by means of esophagoscopy. Radium is applied by means of a sound (6-7 cg.) down to the stricture. The treatments are of about 4 hours duration, the sum total being 30 hours. Two cases in the incipient stages were cured; all the others were greatly benefitted. ED.

1582

Result After Operation for Aneurysm of the Carotid Artery. T. J. HARRIS *Proc. N. Y. Acad. of Med.*, Jan. 24, 1912.

Abstracted in THE LARYNGOSCOPE, p. 988, July, 1912.

1584

Treatment of the Dysphagia in Tuberculosis by Injection of Alcohol in the Upper Laryngeal Nerve. R. HELOT, *Rev. Med de Normandie*, March, 1912.

Disturbances in speech and dysphagia are the earliest manifestations of laryngeal tuberculosis. To combat the later Helot injected alcohol in the upper laryngeal nerve of three cases with an almost normal alimentation resulting. Helot gives an historical survey of this method and indicates in detail his technic. The effect lasts for weeks and his method is simple. ED.

1586

Treatment of Laryngeal Tuberculosis. A. S. HETT, *Brit. Jour. of Tuberculosis*, July, 1912.

Hett points out that slight lesions in an advanced case of pulmonary tuberculosis are graver than extensive ones in patients with normal temperature but chronic pulmonary involvement, and it is in the latter case that radical surgical procedure is often attended with excellent results. If the chest is in good condition lesions of the vocal cords can often be cured by absolute rest for several months; enlarged arytenoids can be reduced by galvano-cautery or by punching them out. Successive deep cautery punctures every ten days are effective in treating infiltrations without ulceration of the ventricular bands; superficial ulcerations of the vocal cord should merely be touched with the cautery; carettement should be sparingly employed and only in cases of large ulcers; in tuberculous lesions of the epiglottis, that body can be removed with punch forceps. An alkalin laryngeal spray is effective in preventing accumulations of secretions in the larynx. Various therapies are recommended also to overcome cough when present. ED.

1588

Calcium Salts in the Treatment of Asthma and Hay-fever. R. HOFFMANN, *Muench. Med. Wchnschr.*, May 21, 1912, and *Therapeut. Monatsh.*, May, 1912.

Hoffmann discusses the various forms of asthma and their relation to nasal affection. The author further reports favorably on his experiments with calcium in the treatment of these affections and urges further experimentation along this line. Ed.

1589

Palliative Treatment of Terminal Laryngeal Tuberculosis. H. Horn, *Jour. A. M. A.*, p. 793, Sept. 7, 1912.

The Hoffmann method of injecting the superior laryngeal nerve is recommended to produce permanent anesthesia as a palliative measure. The injection can be repeated as often as necessary with impunity, relief is obtained for from a few hours to forty days. Besides this the patient becomes more optimistic and tries to take food. In only three cases were the results negative. Horn carefully details his technic. Ed.

1590

Treatment of Foreign Body in the Esophagus. E. F. Ingals.

Original contribution to The Laryngoscope, p. 47, Jan., 1912.

1592

Treatment of Esophageal Stenosis with Electrolysis. Jenckel, *Klin. therap. Wchnschr.*, No. 34, 1912.

Abstracted in The Laryngoscope, p. 230, March, 1913.

1593

Resection of the Esophagus and Larynx for Carcinoma. Kammerer, *Ann. of Surg.*, Feb., 1912.

Kammerer presented the following case before the New York Surgical Society's Meeting, October 25, 1911: Man, 45 years old. Mass could be felt by external palpation of neck. Marked emaciation. Preliminary gastrostomy. Two weeks later mass exposed by incision along anterior border of left sterno-mastoid muscle. The entire laryngo-pharynx, two inches of the esophagus proper, the entire larynx, and one-half of the thyroid gland removed. Stump of trachea sutured to skin above the sternum, the pharynx above and the esophagus below closed by suture. Six months later much improved in general condition. Packard.

1594

Radium Therapy in Tracheal Stenosis. Kantas, *Wr. med. Wchnschr.*, I. 1190, April 27, 1912.

For this procedure Kantas employs O'Dwyer tubes of various lengths with walls of 5 mm. thickness, closed at both ends. One of the chief advantages of this method is the anesthetizing effect of the radium and the smooth non-proliferating cicatrix formed. Ed.

1595

Calcium Salts in Treatment of Asthma. C. Kayser, *Therap. Monatsh.*, March, 1912.

One tablespoonful of a five per cent solution of calcium chlorid given in milk every two hours for at least three or four days is recommended. In one case of hay-fever-asthma and in 13 other asthmatic conditions this measure proved of prophylactic effect. In some cases the paroxysms did not return for months, in some the relief obtained has been permanent. Ed.

1598

Treatment of Laryngeal Tuberculosis. G. Killian, *Deut. Med. Wchnschr.*, March 28, 1912, and *Med. Klinik*, No. 14, 1912.

Abstracted in The Laryngoscope, p. 1135, Sept., 1912.

1605

Epiglottidectomy; The Rational Treatment of Epiglottidean Tuberculosis. L. B. Lockard.

Original contribution to The Laryngoscope, p. 113, Feb., 1912.

1608

Treatment of Laryngeal Papilloma wtih Calcified Magnesia. G. Masini, *Boll. delle Mal. dell'Orecchio*, p. 49, March, 1912.

During thirty-five years the woman, whose case was reported was repeatedly operated for the removal of recurring laryngeal papillomata. To prevent asphyxiation the patient had to be tracheotomized. The daily use of calcined magnesia (4-6 gr.) resulted in an absolute cure within three months. Ed.

1609

Treatment of Cicatricial Stenosis of Larynx. E. Mayer.

Original contribution to The Laryngoscope, p. 42, Jan., 1912.

1610

Management of Asthma. H. M. McClanahan, *Am. Jour. Med. Sci*, p. 836, June, 1912.

McClanahan states from his experience that most of the infants and children afflicted with asthma ultimately recover. Sodium iodid and syrup of hydriodic acid are very effective if administered between the attack, itself, adrenalin is of some service while morphia cuts short the attacks. During the attack, itself, adrenalin is of some service while morphia cuts short the attack. Inhalation relieves the accompanying bronchitis. The underlying cause of the asthma should be carefully ascertained. Ed.

1612

Value of Electrolysis in Endo-laryngeal Cancer. Mermod, *Rev. hebd. de Laryngol.*, p. 33, July 13, 1912.

Man in whom recurrence of carcinoma of vocal cords took place refused another operation. Five applications of electrolysis, 15 minutes each, resulted in a recovery which has lasted over a year. In two other, more involved cases, cure was not effected, but because of the improvement due to the electrolysis, tracheotomy became unnecessary. Ed.

1616

Differential Pressure Procedures in Treatment of Stenosis of the Trachea. T. Naegeli, *Beitr. z. klin. Chir.*, Jan., 1912.

While preparing to remove a thyroid cancer which was causing extreme dyspnea the apparatus to induce positive differential pressure was applied whereupon the dyspnea, the stridor and cyanosis ceased. As soon as the mask was removed all the symptoms returned. Later experiments on animals to ascertain whether tracheal stenosis could be relieved by this procedure gave positive results. This procedure is of especial service in goiter operations preventing collapse of the trachea after removal of the thyroid compressing it; this over-pressure makes tracheotomy unnecessary. ED.

1618

Local Anesthesia of Larynx by Nerve Blocking with Alcohol. M. PAVESI AND E. CURTI, *Gaz. degli Osped. e delle Clin.*, p. 681, May 30, 1912. Abstracted in THE LARYNGOSCOPE, p. 58, Jan., 1913.

1628

Free Tracheo-tracheal Plastic. SANTINI, *Bull. delle Sci-Med.*, July, 1912.

The partial graft of a fresh homo- or hetero-plastic tissue may produce good results if the implanted tissue undergoes no modification. In this way it may be possible to cure tracheal fistula. GOLDSTEIN.

1629

Simple Operation for Esophageal Diverticulum. H. H. SCHMID, *Wr. klin. Wchnschr.*, March 28, 1912.

Because of the high mortality following operation for the extirpation of diverticula Schmid proposes a technic by which the diverticulum is exposed, freed, evacuated, pulled outward longitudinally and transversely and then turned upward and stitched to the esophagus. The aseptic conditions are better, early swallowing does not produce suture separation or fistula formation, and gastrostomy is unnecessary. ED.

1636

Dry Nebula Obtained by Stefanini-Gradenigo Inhalation Method. A. STEFANINI, *Arch. ital. di Otol.*, p. 223, May, 1912.

A comparison between the mineral salt composition of the sea-air and that obtained in the inhalatorium was made and the latter found preferable. ED.

1647

Endo-nasal Asthma Therapy. M. WASSERMANN, *Muench. med. Wchnschr.*, No. 1, 1912.

A tampon of cotton saturated with some local anesthesia is inserted into each nostril so that it rests both on the tuberculum septi and lower turbinal. This tampon is left in place for fifteen minutes and is inserted daily for eight to fourteen days, then less frequently until it is finally entirely omitted. ED.

1648

New Method of Treating Asthma. WEISS, *Deut. med. Wchnschr.*, Sept. 19, 1912.

Injections of suprarenin (.0008g.) and hypophysis extract (1.1 ccm.) are made with instantaneous relief resulting. In the 3,000 instances in which this injection, termed asthmolysin, was made, but ten proved unsuccessful. ED.

1657

Diphtheria of the Middle Ear. O. Benesi, *Wr. klin. Wchnschr.*, Sept. 12, 1912.

Girl of 19 years had suppurative ear almost all her life; during the last few years it caused her headaches and for several weeks vertigo. Radical operation. Microscopical and cultural examination of the pus showed the presence of only diphtheria bacilli. The patient had never in her life had diphtheria. Ed.

1666

Report of a Case of Nasal Diphtheria. N. A. Christie, *Can. Prac. and Rev.*, Jan., 1912.

Abstracted in The Laryngoscope, p. 77, Jan., 1913.

1670

Determination of Diphtheria Bacilli. H. Comradi and P. Troch, *Muench. med. Wchnschr.*, July 23, 1912.

The new culture medium consists of 10 gm. of meat extract, 5 gm. of sodium chlorid, 20 gm. of peptone (Witte), and 6 gm. of calcium acetate to which 1000 ccm. of water is added. After the mixture has been left over a water-bath for one-half hour it is filtered and 1 per cent grape-sugar added. One part of this mixture is added to 3 parts of fresh sterile blood-serum and to 100 ccm. of this mixture 2 ccm. of a 1 per cent solution of potassium tellurite is added. This mixture is then shaken and distributed in Petri dishes. The authors have had splendid results with this method; the diphtheria colonies when present are colored black because of the tellurium dioxid. Ed.

1671

Diphtheria Bacilli in the Urine. H. Conradi and Bierast, *Deut. med. Wchnschr.*, Aug. 22, 1912.

The urine (20-30 ccm.) obtained in a sterile manner is centrifuged; the sediment streaked out on plates and stained with methylene blue and Neisser's double stain. In 54 of 155 cases of diphtheria the bacilli were found in the urine, (in 32 females and in 22 males); 31 cases contained it during the first week of illness, 10 in the second; 5 in the third, and 2 in the fourth, and some as late as the ninth week. This evidence is of value in combatting the spread of the disease. Ed.

1677

Some Experiments on the Action of Staphylococcus Aureus on the Klebs-Loeffler Bacillus. Lydia M. Dewitt, *Jour. of Inf. Dis.*, Jan., 1912.

After reporting a series of animal experiments and the treatment of two human patients Dewitt came to the conclusion that there was no inherent antagonism or incompatibility between staphylococcus aureus and the Klebs-Loeffler bacillus.

Experiments on animals showed that 40 per cent of the animals treated with the staphylococcus got rid of the diphtheria organism more quickly than the untreated ones; in 60 per cent the cultures gave the Klebs-Loeffler bacillus either the same time or longer. Dr. Dewitt thinks that the treatment with the staphylococcus culture should not be used in acute cases but only in those in which diphtheria bacilli persisted after the throat had healed and the patient is clinically well.

The reason for the apparently favorable action of the staphylococcus aureus on chronic diphtheria cases seems not to be an antagonism or incompatibility between the two organisms, but an effort to reinforce the favorable, friendly throat flora in the cases in which they are unable to regain their natural, normal ascendency. HALSTED.

1681

Diphtheria Bacilli in Chronic Otites. GALTUNG, *Norsk mag. f. Legevidensk.*, 1912.

In 13 of 50 cases the author found diphtheroid bacilli, but he cannot, as yet, furnish proof that a diphtheria existed. ED.

1682

Raskin's Technic for Staining Diphtheria Bacilli. O. GOETZE, *Muench. med. Wchnschr.*, April 23, 1912.

Acetic acid (5 ccm.), distilled water (95 ccm.), alcohol (95 per cent, 100 ccm.), saturated aqueous methylene blue solution (4 ccm.), and Ziehl's carbol fuchsin solution (4 ccm.) constitute Raskin's coloring for the diphtheria bacillus. Goetze feels that it will not, however, supplant the Neisser method. ED.

1693

Diphtheria Bacilli in the Urine. R. KOCH, *Deut. med. Wchnschr.*, Dec. 12, 1912.

In 26 diphtheria patients, 111 urine examinations were made. In four instances the bacilli from the urine of two patients were pathogenic for laboratory animals. In 10 examinations from 5 patients diphtheroid bacilli were found, and 4 times in 19 examinations of the urine of scarlet fever cases. ED.

1705

Chronic Nasal Diphtheria. C. M. MILLER, *Va. Med. Semi-Monthly*, p. 13, April 12, 1912.

Six cases are reported. The rhinorrhea is of a serious, sometimes of a muco-purulent character, and irritates the edges of the nostrils and upper lip. Nasal obstruction is also present; sometimes the affection is diagnosed as a foreign body. Upon rhinoscopy the false membranes in the nasal fossae, or occasionally in one fossa, are seen. Pharyngeal findings negative. Sometimes the false membranes are absent. Bacteriologic investigation reveals the presence of the Loeffler bacillus. The prognosis is usually good. ED.

1711

Role of Animal Experimentation in the Discoveries Leading to Our Present Knowledge of the Etiology, Prevention and Cure of Diphtheria. W. H. PARK, *Jour. A. M. A.*, p. 453, Feb. 17, 1912.

Park takes up the identity of "croup" and laryngeal diphtheria; the gradual substitution in the death certificates by physicians of New York

City of the name of diphtheria for earlier special designations; the means by which we obtain our present comprehensive knowledge concerning the nature and prevention of diphtheria; the role of animal experimentation in the discovery and practical production of diphtheria antitoxin; the value of antitoxin in the prevention and treatment of diphtheria, the results of antitoxin treatment; the absolute mortalities during a long series of years in large cities as an index of the value of antitoxin treatment; the results obtained in hospitals and elsewhere in the years before and after the introduction of antitoxin the after-effects of the serum injection, etc. ED.

1725

Unrecognized Diphtheria. S. TAYLOR, *W. London Med. Jour.*, Jan., 1912.

Simple cases of inflammation of the throat without membrane formation, swelling of the glands of the neck, albuminuria, or changes in the reflexes are often diphtheritic. Four cases are reported in which the peripheral neuritis was the first evidence that a former throat inflammation was diphtheritic. In all doubtful cases of throat inflammation cultures should be made. ED.

1738

Experimental Exophthalmic Goiter. M. BARUCH, *Zntrlbl. f. Chir.*, July 6, 1912.

By means of intra-peritoneal injection of a preparation of human strumas from patient, not however affected with Basedow's disease, a typical exophthalmic goiter was produced. ED.

1770

Observations on the Thyroid Gland. W. EDMUNDS, *Jour. of Pathol. and Bacteriol.*, April, 1912.

In this paper the author reports further on his experiments on cats and dogs. He finds that if large doses of calcium be administered after total removal of the thyroids and parathyroids the early death from tetany can be postponed; the administration of pituitary extract has not this effect. ED.

1775

Case of Ligneous Thyroiditis. G. FETTEROLF.

Original contribution to THE LARYNGOSCOPE, p. 1015, Aug., 1912.

1780

Action of Parathyroids in Nephritis. M. GEORGOPULOS, *Ztschr. f. klin. Med.*, Vol. 76, Nos. 3-4, 1912.

The author removed the thyroid in rabbits and injected uranium nitrate to induce nephritis; thus causing a hyperfunctioning of the parathyroids. From the results Georgopulos concludes that the parathyroids counteract the systemic intoxication in nephritis and that, therefore, parathyroid extract would be useful in the treatment of nephritis. ED.

1793

Blood Picture in Goiter. J. HATIEGAN, *Wr. klin. Wchnschr.*, Sept. 26, 1912.

The author reports on the blood-finding in two cases of exophthalmic goiter, 35 of goiter and 3 operated cases of goiter. About one-half of the goiter cases presented a lymphocytosis and the conclusion is that this finding is unreliable in the diagnosis and prognosis of Basedow's disease.

ED

1838

Factors of Safety in Operating for Exophthalmic Goiter. C. H. MAYO, *Jour. A. M. A.*, p. 26, July 6, 1912.

Within the past year 278 cases were operated without a single death. Five essential "factors of safety" are enumerated to which the successful outcome of these operations is ascribed. ED.

1840

Parathyroids and Their Surgical Relation to Goiter. C. H. MAYO, *Ann. of Surg.*, Feb., 1912.

Mayo discusses the definite relation between parathyroidectomy and tetany and the various therapies to overcome the latter. ED.

1854

Case of Ligneous Thyroiditis. G. R. MURRAY AND F. H. SOUTHAM, *Lancet*, May 4, 1912.

For one and a half years young man noticed slow growth on neck attended by dyspnea, stridor and dysphonia; swelling of both lobes of thyroid. Operation disclosed white, hard thyroid, densely adherent to surrounding structures. Lobes and isthmus removed, also dense connective tissue bands in front of trachea; myxedema controlled by administration of thyroid substance. Microscopic examination: fibrosis. Cause of this disturbance—also known as Riedel's disease—unknown. ED.

1864

Thyroid Transplantation. PAYR, *Post-Graduate*, June, 1912.

Part of a normal thyroid was transplanted in the kidney of an idiotic child. Mental regeneration took place and in a month child was cured; the implanted thyroid maintained its functional capacity in the new body. ED.

1892

Acute Inflammation of the Thyroid Gland. O. J. STEIN.

Original contribution to THE LARYNGOSCOPE, p. 1020, Aug., 1912.

1919

Fetus with Congenital Hereditary Exophthalmic Goiter. C. WHITE, *Jour. Obstetr. and Gynecol. of Brit. Empire*, April, 1912.

The mother was 23 years old; the symptoms of exophthalmic goiter became marked when she was five months pregnant, and increased so rapidly that she had to be taken to the hospital. The fetal heart was over 200 and the question arose whether the maternal thyroid toxemia affected the child or whether the disease was actually present in the fetus.

The child lived 35 hours. It presented all the features of the disease present in the mother—prominent staring eyes, well-marked uniform enlargement of the thyroid. The heart-beats were uncountable, only a loud murmur being heard over the precordium, temperature 99°F.; cyanosis.

The mother improved during the puerperium, the symptoms of the Grave's disease becoming less marked; urine normal. After a few months she again became pregnant; all the symptoms again became aggravated; the child was still-born but showed no other abnormalities.
Ed.

1920

Anaphylaxis from Excessive Functioning of the Thyroid. G. Wolfsohn, *Deut. med. Wchnschr.*, July 25, 1912.

Recent studies show a correspondence in the blood pictures of the two conditions—leucopenia, mononucleosis, eosinophilia and delayed coagulability. Vaso-motor excitability, dermographism, urticaria, transient edema, outbreaks of sweating, bulimia, vomiting, diarrhea, anxiety, flushes, tremor, paresis, convulsions, cardiac palpitation, tachycardia, asthma-like attacks and mucous hemorrhages are also found in both conditions. Therefore the conclusion is that hyperthyreosis is an anaphylaxis.
Ed.

1923

Method of Outlining the Thyroid Gland. M. S. Woodbury, *Jour. A. M. A.*, p. 1675, June 1, 1912.

Woodbury has worked out on the cadaver a means of outlining the thyroid with a fair degree of accuracy. He urges that in such examination careful auscultation over the four thyroid arteries and of the heart and lungs should be made.
Ed.

1930

Treatment of Vascular Goiter by Exothyroplexy. Bazy, *Tribune med.*, Feb., 1912.

The patient was 42 years old with a very vascular goiter of seven months which was cured by exothyroplexy. The author feels that this method should not only be used in the vascular type but should also be tried in other large goiters.
Ed.

1933

Present Status of Serum Treatment for Hyperthyroidism. S. P. Beebe, *Interstate Med. Jour.*, p. 409, May, 1912.

Beebe uses a serum developed by inoculating rabbits and sheep with the proteids obtained from human thyroid glands and has been very successful with this therapy. One of the chief requisites for success is early diagnosis. Then, too, the patient with hyperthyroidism should be regarded as sick and in addition to serum he should receive all the care and attention usually given patients.
Ed.

1941

Non-surgical Treatment of Exophthalmic Goiter. S. S. COHEN, *N. Y. State Jour. of Med.*, July, 1912, and *Am. Jour. of Med. Sci.*, July, 1912.

The author feels that 25 to 30 per cent of cases of exophthalmic goiter can be cured without operation. By application of ice water coils over the heart and spine, administration of proper extracts, rest, fresh air, regulation of diet, educational exercise of the vaso-motor system, symptomatic medication, etc. Good results may be expected if the cases are recognized early. With great care the number of recoveries may even be increased to 80 per cent or more. ED

1943

Sero-therapy of Post-diphtheritic Paralysis. M. CROHN, *Muench. med. Wchnschr.*, Jan. 9, 1912.

In three cases of post-diphtheritic paralysis of the velum palati and leg, the author used serum injections similar to Kohts' method. The results were very good. In contrast to Kohts, however, Crohn uses smaller doses, nor does he reinject the serum every two days. Strychnin can be given to help repair the nerve-cell destruction. No serum sickness was observed. ED.

1954

Treatment of Diphtheria Infection by Diphtheria Endotoxin. R. T. HEWLETT AND A. T. NANKIVELL, *Lancet*, July 20, 1912.

Four or five weeks after the onset of the attack, while the membrane was still on the tonsils the authors gave diphtheria endotoxin to five patients. In about ten days four of the five patients were free from the diphtheria bacilli and the fifth recovered in another fortnight. Most of the patients had harbored the diphtheria bacilli for weeks or months. The initial dose was 2 mg. Immunity, however, was not established, for one patient developed active diphtheria three months after the injection. ED.

1964

Local Sero-therapy in Diphtheria, Scarlet Fever and Suppurative Processes. LOREY, *Med. Klinik.* June 30, 1912.

Seventeen cases of diphtheria are recorded with the conclusion that pure cultures of staphylococcus when sprayed into the throat and nasal cavity will cause a disappearance of the diphtheria bacilli. The treatment is most satisfactory in the carriers of the bacilli. ED.

1968

Vaccine Treatment of Simple Goiter. R. MCCARRISON, *Lancet*, Feb. 10, 1912.

McCarrison has successfully treated thirty-three cases of parenchymatous goiter by vaccines made from the amebic flora of the intestines, and from the somewhat altered type of colon bacillus found in this growth. Vaccines made from a staphylococcus and from a spore-bearing bacillus also acted favorably. The explanation of this therapy offered is that the thyroid can normally combat certain toxins found in the intestines; when, however, the specific virus of goiter is present in addition the extra strain causes the thyroid to hypertrophy. The use of one of the vaccines neutralizes the toxins in the intestine due to the bacteria present, and the gland becomes normal and can again take care of the specific toxin. Ed.

1978

Diphtheritic Serum Used to Control Bleeding in a Hemophilac. M. J. Perkins, *Jour. A. M. A.*, p. 1539, Oct. 26, 1912.

Perkins tells of a hemophiliac, with a bleeding family history, who was suffering from a persistent and extensive hemorrhage from a cut over the upper incisors. He was already much weakened from loss of blood, when other horse-serum not being available, he was given 3,000 units of diphtheritic serum, hypodermatically, a pledget of absorbent cotton placed over the cut and the lip drawn down over it. There was still a little bleeding, but it was easily controlled and was less after each change of the cotton, and in two or three days it entirely ceased. The other treatment was the use of calcium lactate, in two doses, respectively 30 and 180 grains by mouth, and iron and arsenic for the subsequent anemia. Perkins credits both the serum and the calcium lactate for the good results in this case.

1984

Hot-air Treatment of Diphtheria. Rendu, *Prov. med.*, Feb. 17, 1912; and *Bib. univ. et rev. Swisse*, May, 1912.

Rendu states that 176°F. for one minute, 140°F. for ten minutes or 122°F. for fifteen minutes kills all diphtheria organisms. Diphtheria patients exposed to a temperature of 176°F. for five minutes greatly improved. The hot air is not to be a substitute for the antitoxin but to be used in conjunction with it. Ed.

1997

Thyroid Cartilage Plastic. U. S. Torrini, *Arch. Ital. di Otol.*, p. 89, March, 1912.

The author resected the thyroid cartilage of rabbits and dogs, removing one ccm. or more, the resection extending through the entire cartilage but retaining the mucous membrane intact. He then placed a cartilage perichondrium flap over the resected portion and sewed same in position with catgut, the soft parts were sewed in position in layers over this area.

The animals were killed in time-periods from six to 130 days and a portion from the operative field removed for examination. It was shown that the resected portion of the thyroid cartilage was replaced in this auto-plastic by cartilage perichondrium and that such plastic presented possibilities of good results in young subjects. In the more advanced stage of cartilage development where decalcification was present the vitality of such a plastic could not be depended upon. Goldstein.

1999

Putuitrin in Heart Failure After Diphtheria. H. VON WILLFBRAND, *Finska Lekaresellskapets Handlingar*, Vol. 54, 1912.

The author has used putuitrin in twenty cases of diphtheria complicated by heart failure and low blood pressure, in eighteen of which it proved successful. No complications followed its use. The author states that it is only of use in combatting the general weakness but that the antitoxin must be used for the infection itself. ED.

2005

Syphilitic Chancre of the External Ear. BARBIER, *These de Lyon*, 1912.

The etiology of the infection is very interesting. Among accidental causes, impossible to forsee, is the piercing of the ears with infected instruments. The clinical picture is marked by the frequency of an inflammatory condition in the chancre and of satellitic ganglions; frequency of crusty chancre; absence or imperceptibility of an induration, and phagedenic nature of the chancre. The rarity of this lesion is the only obstacle to easy recognition. ED.

2006

Condylomata Acuminata of External Auditory Canal. C. E. BENJAMINS, *Ztschr. f. Ohrenh u. Krankh. d. Luftw.*, p. 117, Bd. 66, Heft 1-2, 1912.

In six of his Chinese patients the author found the external auditory canals filled with peculiar pedunculated polyps that are pale red and bleed easily upon being touched. Only rarely is the drum membrane involved. After removal of the polyps the hearing becomes normal. The microscopic picture is similar to that in condylomata acuminata of the genital organs. The Chinese are in the habit of having their ears cleaned by barbers who use the same instruments for cleaning the ears as are used for removing condylomata acuminata from the genital organs and thus the infection is spread. ED.

2007

Peculiar Foreign Body in Auditory Canal. J. BOULAI, *Arch. intern. de Laryngol.*, p. 144, Jan.-Feb., 1912.

Child of 2 years with right ear suppurating for several months; external auditory canal filled with growths; pus of greenish color, odorless; only a few swollen glands in neighborhood of ear. Seven months ago the child fell while holding a wooden rod in its mouth; the rod broke and the anterior portion could not be located. Child bled somewhat and complained of pain in neck.

Above the right tonsil in the anterior part of the palate a small hole was visible. The auditory canal was cleansed and the foreign body removed therefrom. Rapid recovery. The foreign body entered through the anterior portion of palate and because of the wide-spread ulceration penetrated the inferior wall of the external auditory canal. ED.

2008

Fracture of Auditory Canal. A. BROCA, *Presse Med.*, Feb. 21, 1912.

Report of a case of fracture of the canal with prolonged hemorrhage through ear and pharynx without cerebral symptoms. The author discusses the conditions which can bring about the hemorrhagic symptoms and indicates that through lumbar puncture and examination of the tympanum one can state definitely the prognosis as well as the diagnosis.

Ed.

2010

Some Cases of Papillomata of the Auditory Canal. Caldera, *Arch. ital. di Otol.*, p. 147, March, 1912.

Two cases are reported, one in a pregnant woman of 35 years, the other in a girl of 17 who had also otorrhea. In the first case there was but one papilloma, the size of a bean; in the second multiple papillomata the size of hemp-seeds. Ed.

2011

Absence of the Auditory Canal and Other Anomalies of the External Ear. J. A. Pires de Limd, *Jour. of Anat. and Physiol.*, Nov., 1912.

De Lima reports the autopsy findings of a case with absence of the external auditory canal and tympanic cavity and after reviewing the literature concludes that: "The congenital occlusion of the external auditory canal is very rare. The anomaly is produced by the imperfect development of the first branchial cleft. The absence of the external auditory canal does not necessarily cause deafness. Halsted.

2012

Stubborn Odontaglia Due to Cerumen in Ear. P. De Piesse, *Ann. de la Policlin, Cent.*, Jan., 1912.

Man suffered from neuralgia of the lower molar teeth which a dentist successively removed without amelioration of the pain. The patient was referred to the author who could find nothing in the dental region and therefore examined the auditory canal which he found occluded with cerumen; upon removing this the pain ceased. The author feels that such conditions are frequent. Ed.

2014

Case of Perichondritis Gonorrhoica of Both Auricles. H. Fischer, *Ztschr. f. Ohrenh.*, p. 112, Bd. 66, Heft 1-2, 1912.

Man infected with acute gonorrhea six times within six day; last two times both auricles were involved and became red and swollen. Two firm highly discolored nodules appeared on antihelix and on the undersurface of the auricles which may be regarded as the circumscribed foci of infiltration embedded between the perichondrium and cartilage. Ed.

2016

Aural Monstrosities with Absence of External Auditory Canals. E. Gorokhoff, *Med. Sovremenik*, No. 8, 1912.

This defect was bilateral. The infant was operated under chloroform. A skin incision was made behind the right ear to the bone as if for a middle ear operation. The external auditory canal was entirely undeveloped, and in its place there was an osseous thickening. Above the place where the external ear should have been a thin, osseous lamella was raised with the chisel and the dura mater was immediately seen.

Another osseous lamella, a little lower, was raised and again the dura mater appeared. Still lower, by means of the chisel the middle ear was discovered and the width of canal enlarged ½ cm. in the bony wall. A strip taken near the canal (4 cm. long and 1 cm. wide) was introduced in the orifice made in the bone. The infant heard a little; at three years he began to talk. ED.

2017

Button of Biskra (Algiers) of the Auricle. GUARRACCIA, *Ann. des Mal. de l'Oreille*, p. 475, No. 11, 1912.

Report of a very rare and unusual case of what dermatologists commonly call "button of Biskra" (Algiers). This is a dermal tumor occurring in buttons on various parts of the skin and is supposed to have as its main pathological factor and exciting cause the blood plaques of Wright. These were demonstrable in this case. The lesions involved a large portion of the helix of the right ear, was circumscribed and of a typical button-form. The blood examination revealed the presence of a large number of blood plaques. GOLDSTEIN.

2019

Some Unusual Forms of Malformation of Ear. P. KRAMPITZ, *Ztschr. f. Ohrenh.*, p. 44, Bd. 65, Heft 1, 1912.

The author reports of some very unusual forms of aural malformation: Dextrocardia, defect of left thumb and stunted growth of left forearm co-existing with defect in ear; total deformity of both auricles and auditory canals; aplasia of the acusticus and rudimentary growth in the facialis; co-existence of narrow auditory canal and stunted auricle; cul-de-sac-like auditory canal with perfectly normal auricle and rudimentary tympanic cavity. ED.

2024

Case of Bilateral Inflammation of the External Auditory Canal. D. ROY, *Ann. of Otol.*, p. 1051, Dec., 1912.

The case, so far as the author could learn, was unique. The patient was a woman of 50, who, when first seen, showed characteristic swelling of the right external canal. Prompt recovery followed deep incision. Shortly after, the left canal became involved. Improvement, but not recovery under treatment. Headaches persisted for three weeks. Temperature and blood condition showed sepsis. The middle ear was never involved. She had one chill. Death. Autopsy showed septic thrombosis of the right lateral sinus and organized clot in the left lateral sinus. Middle and internal ears macroscopically normal. The question of sepsis in this case depended upon its origin from the auditory canals. The author emphasized the importance of considering in the future the possible gravity of furunculosis of the external auditory canals.

2025

Facial Paralysis Complicating Suppurative Otitis Media; A Typical Mastoid Operation. E. AMBERG, *N. Y. Med. Jour.*, p. 16, July 6, 1912.

The paralysis was at first thought to be rheumatic, especially since the patient worked in a warm place subject to draughts. After a mastoid operation the paralysis decreased but to date has not disappeared, especially in the region of the mouth. Ed.

2029

Anesthesia of the Tympanum. N. R. Blegvad, *Arch. intern. de Laryngol.*, p. 118, Jan.-Feb., 1912.

The difficulty of anesthetizing the tympanum is due to the poly-stratified, pavement-like epithelium which covers the tympanum and which is impermeable to the majority of fluids. Before the nerves can be effected this epithelium must be destroyed. The author recommends a solution which he has found of value. Ed.

2032

Fibroma or Fibro-angioma of the Middle Ear. A. J. Brady, *Ann. of Otol.*, p. 787, Sept., 1912.

Two of the cases occurred in women and one in a man; the ages ranged from 22 to 27 years. Brady discusses the clinical appearance and symptoms, the etiology and the pathology of these growths. All three cases recovered after operation. Ed.

2034

Two Cases of Accidents in Telephone Operators. R. Castaneda, *Bol. de Laryngol. Otol. y. Rhinol.*, p. 97, April-June, 1912.

One telephone operator suffered from nausea and vertigo. It was found that a big piece of cerumen somewhat mobile almost occluded her canal, the mobility causing the vertigo when the receiver was applied. Removal of wax resulted in entire relief of symptoms.

In the other case the operator suffered from tinnitus and auditory hyperesthesia. The patient was neurasthenic and the use of the telephone aggravated the condition. Ed.

2038

One Hundred Cases of Suppurative Otitis Media Cured by Light Rays. J. Dionisio, *Arch. ital. di Otol.*, Vol. 23, No. 5, p. 357, 1912.

Of the 100 cases treated by light rays, 35 were totally cured and 29 temporarily; in 35 cases the improvement was but slight. In some cases there was improvement of the hearing, disappearance of polypi, and of hyperostosis of the canal due to inflammation. Ed.

2044

Spontaneous Rupture of the Internal Carotid Artery Complicating Suppurative Otitis Media and Mastoiditis. L. L. Henninger. *Jour. Iowa State Med. Soc.*, Sept., 1912,

Patient, 7 years old, was to be operated for mastoid involvement. As the operator was working his way under the fascia and muscles there was a "gush of black clots and an alarming spurt of arterial blood." The hemorrhage was controlled with difficulty by forcibly packing in gauze.

Five days later the operation was completed but only after the common carotid artery had been cut down and tied off. Patient recovered.

The explanation offered by the author is that the disease process broke down the thin bony wall separating the middle ear from the carotid artery which became eroded and for want of the bony support, it dilated. The surrounding tissues and clots restrained the artery and upon their removal the arterial wall broke. Ed.

2048

Artificial Tympanum. Jacques, *Bull. d'Oto-Rhino-Laryngol.*, p. 244, July, 1912.

Jacques feels that the artificial tympanum has so many advantages that to try it is to adopt it. Ed.

2052

Unusual Complication of Acute Otitis Media and Mastoiditis. C. L. Larsen, *Jour. Lancet.*, June, 1912.

The interest in the case centers in the fact that there was but one metastatic focus in the sacro-iliac joint—a very unusual location. Ed.

2054

Chronic Otitis Media and Cholesteatoma. P. Manasse, *Deut. med. Wchnschr.*, June 20, 1912.

Cholesteatoma of the middle ear, like that in other organs, may be of primary as well as of secondary origin due to the development of epithelium cells from the external ear. There are many cases of middle-ear suppuration with cholesteatoma in which the genesis is uncertain. If by any possible means signs of a primary cholesteatoma are recognizable radical operation should be performed. Ed.

2056

Vertigo Due to Middle-ear Causes. J. F. McKernon, *Post-Grad.*, Oct., 1912.

The immediate cause of this vertigo is stimulation of the end-organ of the vestibular nerve by disturbance of intra-labyrinthine pressure. Otosclerosis, middle-ear suppuration, perilabyrinthitis, cholesteatoma beginning in the attic and extending through the aditus, trauma of drum membrane, dislocation of post-plate of stapes are often predisposing conditions. A report of a case of vertigo in trauma of the membrane is given. Ed.

2057

New Artificial Drum Membrane. Menz, *Deut. med. Wchnschr.*, No. 21, 1912.

For making artificial drum membranes the author employs the same fine rubber of which bath spunges are made. Long cylindrically shaped or round pieces are cut, boiled to sterilize them, and soaked in glycerin. The patient himself introduces the mechanism. At first the artificial drum membrane must be removed at night, and re-introduced in the morning after having been thoroughly cleaned with water and soaked in menthol-glycerin. If there is no unfavorable reaction the membrane may be left in the ear several days, of course, only if the aural suppuration has long since been cured. If the suppuration still persists it is drained through the meshes. ED.

2059

Primary Sarcoma of the Middle Ear. V. NICOLAI, *Arch. ital. di Otol.*, p. 466, Nov., 1912.

In a patient of 19 years large tumor was present which filled the entire auditory canal and spread along the base of the skull to the region of the cervical vertebra. Histological examination disclosed giant-cell sarcoma. Death after four months. ED.

2066

Case of Lymphangioma of the Middle Ear. C. STEIN, *Arch. f. Ohrenh.*, p. 32, Bd. 89, Heft 1, 1912.

This case is described as the form of lymphangioma simplex and the author assumes that it occurred as the result of gradual dilatation of the lymph vessels with new growth of the tissues of the tympanic wall; this being one of the etiological forms as described by Wegner. GOLDSTEIN.

2070

Mobilization of the Drum. M. SUGAR, *Monatschr. f. Ohrenh.*, p. 226, Bd. 46, Heft 2, 1912.

On the lower posterior quadrant of the tympanic membrane a cotton pad of volatile gum-solution is applied for 24 hours after which traction of the drum membrane may be performed. ED.

2074

Artificial Ear Drum. F. VON MENZ, *Muench. med. Wchnschr.*, May 21, 1912.

A very porous rubber sponge is employed which can easily be boiled and can thus be kept sterile. It adapts itself to the shape of the auditory canal and can be introduced by the patient himself. Any aural discharge is soaked up and drained away by the sponge. The effect upon the hearing is as good as with any known prothesis or other artificial ear drum. ED.

2082

Method of Detecting Fixation of Stapes. F. P. STURM, *Jour. of Laryngol. Rhinol. and Otol.*, p. 312, June, 1912.

The test is based upon the facts (1) that in otosclerosis paracusis is invariably present, and (2) that in those cases labyrinthine tension cannot be raised by exerting pressure upon the stapes, which is fixed.

Test for paracusis.—Many patients with undoubted otosclerosis deny that they hear better in a noise, but the presence of paracusis may nevertheless be demonstrated in the following manner: A watch is held at such a distance from the patient's ear that it just ceases to be heard. If, now, a loudly vibrating tuning-fork of low pitch be applied over the mastoid of the same side, the patient at first hears nothing but the note of the fork, but if paracusis is present the tick of the watch becomes audible for a few seconds as the vibrations of the fork diminish in intensity, to disappear again as the fork becomes inaudible.

The author's method of testing the mobility of the stapes is as follows: The largest Eustachian catheter which can be introduced is passed, and the tympanum is gently inflated to make sure that the catheter is properly engaged. Then a few drops of a 10 per cent solution of cocaine in adrenaline are injected in order to render the tube as free as possible. A valveless rubber bag, half emptied of air, is attached to the catheter, and the mobility of the drum is verified by actual inspection as the bag is alternately compressed and relaxed. A vibrating tuning-fork is then applied to the bone over the tympanic antrum, and the rubber bag allowed to expand to its full extent. If the consequent rarefaction within the tympanum causes (1) the sound to appear less to the patient, it means that the indrawn hammer-bone has driven the foot-plate of a movable stapes into the oval window, and so raised the labyrinthine pressure; (2) if the sound appears louder it means that the malleus is ankylosed or stiffened, and therefore unable to exert any inward pressure upon the stapes, which is consequently drawn out of the fenestra, diminishing the tension of the labyrinth, and resulting in a temporarily increased acuity of hearing; (3) if the sound remains unaffected, or so slightly affected that the change is barely perceptible, it may safely be assumed that there is fixation of the stapes.—*Ex.*

2084

Applied Anatomy of the Eustachian Tube. J. A. Bacher.

Original contribution to The Laryngoscope, p. 21, Jan., 1912.

2085

Polyp of Pharyngeal Mouth of Eustachian Tube. C. M. Brown.

Original contribution to The Laryngoscope, p. 37, Jan., 1912.

2087

Eustachian Tube in Chronic Otitis Media. E. M. Holmes, *Ann. of Otol.*, p. 762, Sept., 1912.

General Pathology: The associated inflammation in ear and tube may vary in degree, a severe inflammation of the tube may exist without showing aural signs. Very slight changes in the tube may cause severe aural complications.

Etiology: Nasal pathology—Marked deformities may exist without apparent trouble in the Eustachian tube or ear, and again the relief from slight nasal disease sometimes results in a cure of severe salpingitis and the resulting middle ear conditions; systemic disease; circulatory; digestive disturbances.

Prognosis: As yet our knowledge is not sufficient to give a positive prognosis; many severe middle-ear inflammations of long standing, with marked loss of function, after having failed to respond to long courses of treatment by other methods, may be relieved by restoring the Eustachian tube to its normal function.

Treatment: General epi-pharyngeal applications; surgical treatment of hypertrophies and growths; dilation with bougies; applications within the tube; and general hygienic and systemic treatment.

2090

Two Cases of New Growth Involving the Eustachian Tube. P. C. PROCTOR, *Boston Med. and Surg. Jour.*, Jan. 18, 1912.

In both cases the growth involved the pharyngeal end of the Eustachian tube; in one the tissue was carcinoma, in the other adenoid vegetation or lympho-sarcoma. ED.

2091

Influence of Eustachian Tube in Purulent Otitis. M. D. RITCHIE, *Pa. Med. Jour.*, Jan., 1912.

Ritchie reports eleven cases in which the Yankauer procedure was employed; he feels that this operation should be a preliminary procedure to all intra-tympanic surgery, and that it will reduce the number of radical mastoids in the future. ED.

2092

Case of Otosclerosis with Pathology. A. M. AMADON.

Original contribution to THE LARYNGOSCOPE, p. 927, July, 1912.

2097

Vestibular Apparatus and the Central Nervous System. R. BARANY.

Original contribution to THE LARYNGOSCOPE, p. 81, Feb., 1912.

2098

Clinical Data on "606" and the Internal Ear. G. BARIL, *Rev. hebd. de Laryngol. d'Otol. et de Rhinol.*, p. 241, March 2, 1912.

Abstracted in THE LARYNGOSCOPE, p. 981, July, 1912.

2099

Contribution to the Pathology and Treatment of Otosclerosis. J. C. BECK, *Ann. of Otol.*, p. 203, March, 1912.

Due to the great similarity which Beck noted in osteomalacia and otosclerosis he determined upon injecting adrenalin subcutaneously in the latter cases also, since the former cases are thus favorably influenced. His patients were of three types: The first consisted of those cases where the sclerosis had run its full course with marked involvement of the endorgan of hearing. In these cases the vestibular irritation was greatly reduced and in one case the "terrible noises" ceased, but the hearing remained uninfluenced.

The second group included those more recently affected who had some hearing left, at least in one ear. The hearing of all these improved.

The third group composed of those with fair hearing but clear histories of otosclerosis and evidences of tubal and middle ear inflammation showed definite general symptoms such as acceleration of pulse, giddiness and vaso-motor changes. ED.

2102

Labyrinth and Tendon Reflexes. O. BECK AND P. BEACH, *Berl. klin. Wchnschr.*, Feb. 12, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1156, Sept., 1912.

2103

Otitic Indications and Contra-indications for the Salvarsan Treatment of Syphilis. O. BECK.

Original contribution to THE LARYNGOSCOPE, p. 1077, Sept., 1912.

2118

Histological Labyrinth-findings in Normal Hearing. G. BRUEHL, *Passows Beitr.*, Bd. 5, Heft 5-6, p. 438, 1912.

Bruehl made an histological examination of twenty temporal bones in fifteen patients who died suddenly and whose hearing and tympanic membranes were normal. In no instance were the labyrinthine findings entirely normal. The author then discusses in detail the findings and points out in conclusion that as long as it is impossible to fixate the organs of the ear immediately after death there is danger of regarding changes as pathologic which really are not so. ED.

2127

Wassermann Reaction and Salvarsan in Disease of the Special Sense-organ. E. R. CARPENTER.

Original contribution to THE LARYNGOSCOPE, p. 1104, Sept., 1912.

2137

Vertigo From the Standpoint of the General Practitioner and Otologist. E. B. DENCH, *N. Y. Med. Jour.*, p. 1, Jan. 6, 1912.

In this article Dench calls the attention of the general practitioner to the fact that vertigo is often due entirely to an aural disturbance, and that in such cases the condition is frequently very serious, at times requiring surgical intervention. In a number of cases he has successfully treated this condition by catheter insufflation with introduction of three drops of a two per cent solution of pilocarpin through the catheter into the middle ear. ED.

2141

Vertigo as a Symptom. S. ERBEN, *Med. Klinik*, June 30, 1912.

In this article Erben points out the various causes of vertigo—cold water poured into ear, pressure on brain, vestibular disorders, oculo-motor paralysis, lead and tobacco poisoning, auto-intoxication of intestinal origin, hysteria and neurasthenia. The author differentiates between the symptoms. ED.

2142

Recent Researches on Otosclerosis. G. FERRERI, *Arch. intern. de Laryngol.*, p. 1, Jan.-Feb., 1912.

Ferreri feels that there is a rachitic or osteomalacic basis for otosclerosis and for this reason applied the Wright vaccine in four cases. This injection is given, with favorable results, to rachitic patients. The best results were produced in younger patients still in the development stage. ED.

2143

Report of a Case of Sequestrum of the Semi-circular Canals With Presentation of Specimen. E. P. FOWLER, *Ann. of Otol.*, p. 312, June, 1912.

Woman, aged 45; discharge from ear following grip, which necessitated extensive mastoidectomy. Because of a diabetic condition the carious process went on and a second operation was necessary at which a portion of the vestibule with the three semi-circular canals was removed intact.

ED.

2146

Acoustic Nerve and Salvarsan. G. GELLE, *Rev. hebd. de Laryngol.*, p. 449, Oct. 19, 1912.

Abstracted in THE LARYNGOSCOPE, p. 60, Jan., 1913.

2153

Auditory Vertigo and Tinnitus Aurium. A. A. GRAY, *Am. Medicine*, p. 191, April, 1912.

The majority of the cases of vertigo are due to disturbance in the labyrinth; suppurative middle-ear disease and syphilitic poison are also factors, the latter either acquired or transmitted from parent to child. Instability of the vaso-motor system resulting in disturbances in the alimentary canal, or a condition of exhaustion of the nervous system due to overwork or worry may also cause the vertigo. The greatest aid in diagnosis is the nystagmus tests. The prognosis depends on the exciting cause. Surgical intervention should very rarely be undertaken. ED.

2154

Problem of Otosclerosis and Allied Conditions. ALBERT A. GRAY.

Original contribution to THE LARYNGOSCOPE, p. 1, Jan., 1912.

2163

Nerve Mechanism of the Associated Eye Movements. ANDREAS HOEGYES, *Monatschr. f. Ohrenh.*, Bd. 46, Heft 7, 1912.

Author discusses the separate divisions of the nervous system in relation to the involuntary eye movements. Extirpation or destruction of certain parts of the nervous mechanism does not change or stop the compensatory eyeball movements.

His conclusions following experiments on animals are: (1) The compensatory or passively associated bilateral eye movements stay unchanged after the destruction of the ocular nerve; (2) The hemisphere, ganglion, bulbs, anterior end corpora quadrigenuna, the spinal cord and medulla of longata at level of auditory nerve. The movements stop fully. (a) When the eye muscles or certain nerves moving the muscles are cut. When part of mid-brain and part of cord medulla. When the floor of the fourth ventricle is cut longitudinally. When the auditory nerve is cut. When the membranous labyrinth is destroyed bilaterally. The movements change in character and become less after certain procedures. Cutting certain nerves controlling certain eye muscles; extirpation of the hemispheres or main ganglion; long and cross section of fourth ventricle; unilateral destruction of the membranous labyrinth or auditory nerve

GEIGER (STEIN).

2165

Experiments with the Caloric Cold Water Nystagmus. I. HOFER, *Monatschr. f. Ohrenh.*, p. 1313, Bd. 46, Heft 10, 1912.

The experiment on a patient on whom a radical operation had been performed, showed that if the head is placed in a position in which both ampullar of the horizontal and superior vertical canals occupy the deepest portion of the labyrinth, the ampullar region being then subjected to a stream of cold water, without chilling the remainder of the labyrinth, no calorical nystagmus takes place, uncertain motions of both bulbs, without vertigo are only seen, which upon assuming the upright position are at once changed into typical rotatory nystagmus and intense vertigo, due to increased motion of the endolymph. The correctness of the statement that calorical nystagmus is due to increased motion of the endolymph is thus proved by the change of head and body positions and by impressions made on localized areas of the labyrinth. KLEENE (STEIN).

2170

Tinnitus and Aural Vertigo Due to Uric Acid Diathesis. KAUFMANN.

Abstracted in THE LARYNGOSCOPE, p. 1014, Aug., 1912.

2172

Pathologo-histological Changes in the Labyrinth After Division of the Acoustic Nerve. A. KNICK, *Ztschr. f. Ohrenh.*, Bd. 65, Heft 4, p. 342, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1359, Dec., 1912.

2178

Luetic Disease of the Ear and Salvarsan. LANG, *Casopis. lekaruv ceskych*, No. 10, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1116, Sept., 1912.

2179

Neuritis of the Acoustic Nerve. J. LANG, *Casopis Lekaruv ceskych.* No. 22-25, 1912.

Nine cases are reported: (1) Following influenza. (2) In a girl of 14 years, sudden deafness suddenly appeared a year ago; disturbance in cochlear; Wassermann positive; salvarsan injection with improvement in hearing. (3) Progressive deafness in girl of 17 years due to lues, diagnosed by Wassermann test. No improvement followed administration of salvarsan. (4) Cook of 36 years, experienced subjective noises in ear and vertigo following parotitis; four weeks later sudden deafness in right ear, pronounced vertigo and disturbance of equilibrium which disappeared in four weeks. Wassermann negative; potassium iodid given; no improvement in right ear. (5) Woman of 33; over a year ago meningitis cerebro-spinalis; third day of illness sudden deafness, no vertigo. Examination proved total deafness; it was impossible to stimulate the right vestibule. Could not walk with eyes closed; slight ataxia. (6) Man of 19; cerebro-spinal meningitis at 4 years. Hearing preserved for high, strong tones and for the sound of bells, but could not hear voice. (7, 8, 9) Cases of neuritis r. cochlearis of rheumatic origin. In case 8 improvement in hearing for whispered voice resulted after injection of pilocarpin, and in case 9 after aspirin. In the last two cases Wassermann was negative. Two interesting cases of hysterical anesthesia and two cases of simulation are appended. Ed.

2183

Remarks on the Demonstration of a Model Reconstructing the Canals of Right and Left Labyrinths; Preliminary Communication. E. R. Lewis.

Original contribution to The Laryngoscope, p. 229, March, 1912.

2191

Present Status of Knowledge of Otosclerosis. O. Mayer, *Wr. med. Wchnschr.*, p. 2299, Aug. 24, 1912.

Mayer discusses the recent works on this subject as well as the pathologic anatomical findings. The usual site of the otosclerotic process is anterior to the oval window as well as around the cochlea. He feels that the process is an inflammatory one and proposes the name "osteomyelitis fibrosa." Ed.

2194

Orientation as Means of Determining Degrees of Hearing and Discovering Simulation. J. Meyer, *Monatschr. f. Ohrenh.*, p. 1, Heft 1, 1912.

The patient is placed in a chair, blindfolded and turned around. Then he is asked to point to the place from whence the sound seems to issue. Results show that in normal ear-conditions and in bilateral affection of the labyrinth the sound is heard equally loud regardless of the ear to which it is directed. In unilateral deafness, regardless of the duration, variety or site of the affection, if the fork is held nearer the healthy ear the sound is heard better. By Meyer's tests simulated deafness can also be discovered. Ed.

2195

Anomalies in Tone-perception. J. Moeller, *Ztschr. f. Ohrenh.*, Bd. 65, Heft 1, 1912; and *Arch. intern. de Laryngol.*, p. 708, Nov.-Dec., 1912.

Three anomalous cases are reported in individuals with trained musical perceptions. In the first case, a slight middle catarrh, there were peculiar resonance phenomena. The second case was a diplacusis dysharmonica binauralis due probably to occlusion of the tube and labyrinthine hyperemia. In the third case amusia without other cerebral disorders was present. Ed.

2196

Labyrinth Tests. J. P. Morton, *Can. Med. Assn. Jour.*, Aug., 1912.

The writer reviews the relations of the vestibules to the nervous centers, and the action of stimuli from the vestibule upon the hair cells in the christi acustici. Rotation, caloric, fistula, galvanic, and static tests are discussed in order, and the indications arising from these is diffuse, serous and purulent labyrinthitis. The paper is based upon observations made during a recent visit to the Bruehl and Neumann clinics.

Wishart.

2198

Physiology of the Membranous Labyrinth. W. M. MUNCY, *Jour. of Ophth. Otol. and Laryngol.*, p. 42, Feb., 1912.

Muncy reviews the various plausible theories as to the function of the membranous labyrinth. The article contains no original work. ED.

2201

Untoward Effects of Salvarsan Referable to Eye and Ear. S. L. OLSHO, *Therap. Gaz.*, June 15, 1912.

Olsho reviews forty-two articles and reports the various views. He leans toward the arguments of Ehrlich who claims that eye and ear disturbances have been observed in cases in which no salvarsan has been employed, and that they are natural manifestations of recent syphilis and not of the toxicity of salvarsan. ED.

2202

Case of Paracoustic Vertigo and Nystagmus. J. R. PAGE, *Ann. of Otol.*, p. 779, Sept., 1912.

For past seven years any increased action of the heart, e. g., by running or even laughing, causes the patient to become dizzy and objects looked at to move up and down with the pulsations of the heart. For the past one and a half years certain tones and certain sounds also cause the same sensations. Examination shows lustreless and retracted M. T. Weber, strongly to right. Rinne, positive in each ear. Acoumeter: right ear, 2 inches; left ear, 6 inches. Lower tone limit normal, but upper tone limit reduced to 6.0 and 2.0 respectively in Galton whistle. Normal cerebro-spinal fluid (20 ccm.) were withdrawn through a lumbar puncture, and several myringotomies were performed. After three weeks of increased dizziness symptoms were much improved. Tinnitus the same.

EDGAR (GOLDSTEIN).

2204

Effect of Salvarsan on the Ear. C. E. PERKINS.

Original contribution to THE LARYNGOSCOPE, p. 1089, Sept., 1912.

2209

Two Cases of Tumor of the Auditory Nerve. (Twee gevallen van acusticus gezwel). F. H. QUIX, *Ned. Tijdschr. v. Geneesk.*, Vol. 1, No. 16, 1912.

Q. describes two cases of tumor of the auditory nerve, one of which he has operated on. The second case is confined only to the description of the histological investigation of the mastoid bone of a patient, on whom during post-mortem examination a tumor of the auditory nerve happened to be found.

The description of the operated patient's disease records that five years ago he began to notice that the hearing-power of his left ear had grown weaker and that as time passed by he became more and more hard of hearing. Two years ago singing and whistling in the ears were ascertained which still exist; a year ago he grew dizzy and he occasionally staggers like a drunken man. He moreover had headaches with vomiting. Examination showed the right ear to be normal while on the left side there was a total loss of function of the cochlear and vestibular portions of the auditory nerve, of the chorda tympani, with an anatomical intact middle-ear, insensibility of the left cornea, a widening of the left internal auditory canal (demonstrated by Roentgen rays).

When looking over the literature on the subject, Q. became aware that two sorts of tumor exist: The real tumors of the auditory nerve, which arise and develop primarily in the internal auditory canal and are benign tumors; after many years they can lead to patients' deaths by pressure on the brains. 2. The false ones which begin and develop somewhere on the base of the skull, on the pons Varolii or the cerebellum, and grow into the internal auditory canal. They are nearly always malign gliomas or glio-sarcomas. Up to now forty-two patients had been operated on, of whom eight recovered. In the majority of the cases death took place already on the operating-table by the stopping of the breathing. The operation was performed by sawing out of the temporal region a large piece of periost and bone which could be turned over. Henschen comes to the conclusion that the origin and benignity of the real tumors of the auditory nerve point to the fact that the operating-passage should lead through the not functioning labyrinth to the internal auditory canal. Never before had this procedure been performed. Q. now made up his mind to go this way after having performed the microscopical examination of the tumor of the auditory nerve, which had been occasionally found during post-mortem examination and which proved to be a fibroma, undoubtedly proceeding from the periosteum at the bottom of the internal auditory canal, just where the cochlear nerve penetrates into the axis of the snail-shell.

In narcosis by chloroform a very complete radical operation was performed, in the course of which the facial nerve was immediately sacrificed. After that chiselling away of the bone medial from the lateral sinus in the posterior cranial fossa and higher of the bone in the middle cranial fossa, so that the sinus petrosus superior was released. Then all of the labyrinth is chiselled away from back to front as far as the promontorium. Inside the fenestra ovalis appears a string as thick as a pencil, which easily bleeds when touched, and which moves backward and upward. This string was taken to be the thickened auditory nerve. In order to be able to remove it the surrounding bony wall had to be taken away. When chiselling away a piece of bone in front, the internal carotid artery is laid bare. After this a stop had to be put to the operation on account of violent bleeding from the bottom. Four days after, the operation was continued once more under chloroform narcosis. The back-wall of the internal auditory canal was chiselled away, the string released and clipped off as deep as possible. The clipped off piece of the string is now pulled out and cut off on the other side.

After the operation no labyrinth phenomena appeared in accordance with the fact that the labyrinth was already out of function. One day after the operation there was a slight rotary nystagmus to the right when looking to the right, which, however, changed after some time to a slight horizontal one to the left, when looking to the left as far as possible. It was very remarkable that the left pupil formerly of the same size as the right one has become very narrow now. The ringing had much decreased. The wound soon healed. Three months after the operation the patient no longer complained, except of a little ringing.

After some time, however, the headache returned, the patient vomited again from time to time; meanwhile a papillitis with gentle bleedings arose, the narrow pupil still existed, just like the ringing. The shape of the wound-funnel which had remained of the same depth, made recurrence improbable. Q. is of opinion that a general neurofibromatosis might be the cause of the sufferings.

Histological examination showed the tumor to have a fibrous tissue. The case is interesting because it clearly proves that the cause of tinnitus may be deeper than the labyrinth, deeper even than the first ganglion-cells of the nervous cochlearis (ganglion-cells of the axis of the snail-shell). This fact shows that cutting off the auditory nerve in case of unbearable tinnitus aurium is to be condemned, because it is not a sovereign remedy, apart from the fact that the operation is nearly always fatal. The lasting narrowing of the pupil after removing the auditory nerve, which was formerly perceived in cats, has now appeared in man as well. It is probably caused by taking away fibers of the sympathetic nerve in the vicinity of the internal carotid artery. Pictures of the microphotos of both tumors of the auditory nerve elucidate this interesting description. FREDERIKSE.

2213

The Nervous Vestibularis. W. REEDER, *Jour. of Ophth. and Oto-Laryngol.*, May, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1025, Aug., 1912.

2221

Recent Traumatic Lesions of the Labyrinth. ERICH RUTTIN, *Monatschr. fuer Ohrenh.*, Vol. 46, Heft 4, 1912.

Observations have been mostly on cases in which the injury occurred some time before. Cites six cases observed soon after injury. Three types: (1) Diffuse disturbance of labyrinth; (2) Diffuse lesions of the labyrinth; (3) Circumscribed labyrinth lesions.

The first type considered, a labyrinth fracture or fissure with extended hemorrhage. Symptoms similar to those of diffuse, suppurative labyrinthitis. In the second type the symptoms are similar to the first group, except that the hearing and caloric reaction are present even if only in slight degree. These cases are similar to serous labyrinthitis The third type shows partial deafness, tinnitus and nystagmus. Nystagmus and dizziness may be only temporary and disappear in twenty-four hours.

GEIGER (STEIN).

2226

Structure and Function of the Crista Ampullaris. G. SHAMBAUGH, *Ztsch. f. Ohrenh.*, p. 23, Bd. 65, Heft 1, 1912.

The author gives especial attention to the histological study of that portion of the utriculus which is known as the acoustic portion and to a research as to its function in the production of nystagmus. He feels it plays an important part in the circulation of the endolymphatic fluid. The article is elucidated by histological sections of this portion of the utricle and schemas of the action of the movement of the fluid on the acoustic terminations. Ed.

2228

Diseases of the Labyrinth with Special Reference to the Fistula Symptom. F. R. Spencer.

Original contribution to The Laryngoscope, p. 1038, Aug., 1912.

2229

Isolated Cochlear Degenerative Neuritis. L. Stuetz, *Ztschr. f. Ohrenh.*; p. 190, Bd. 65, Heft 2-3, 1912.

Report of a case of peripheral isolated cochlear degeneration, in which the findings substantiate Wittmack's theory that the degenerative process arises in the supporting apparatus of the organ of Corti as secondary to the nerve-affection. Ed.

2235

Functional Tests and Reactions of the Vestibular Apparatus in Monkeys. W. Uffenorde, *Passows Beitr.*, p. 332, Bd. 5, Heft 5-6, 1912.

Caloric, galvanic and mechanical functional tests were made, from which Uffenorde concludes that the caloric test gives the most information about the state of the labyrinth; the galvanic test is unreliable. Galvanic nystagmus is not necessarily dependent on an intact condition of the ampulla portion of the vestibular apparatus but may be due to disturbance in the nerve-ending or main trunk. Compression-nystagmus may be almost always regarded as due to fistulae in lateral wall of labyrinth capsule. The presence of compression-nystagmus without caloric reaction points to a severe labyrinthine suppuration. All the findings are carefully interpreted. Ed.

2237

Hyperacusis Willisii. V. Urbantschitsch, *Monatschr. f. Ohrenh.*, p. 741, Bd. 46, Heft 6, 1912.

Abstracted in The Laryngoscope, p. 1330, Dec., 1912.

2240

Structure of the Inner Pillars of the Organ of Corti. E. Vasticar, *Arch. intern. de Laryngol.*, March-Aug., 1912.

Vasticar describes in Corti's organ two types of inner pillars, namely main pillars (pilier a palette) that are wedged in between the outer pillars and intermediate pillars (piliers a mortaise) morticed between fasets of the outer pillars. Numerous bands are ramified throughout this interpillars construction. Goldstein.

2244

Physiology of the Cochlea. E. De W. Wales.

Original contribution to The Laryngoscope, p. 936, July, 1912.

2247

Artefact in Histological Examination of Membranous Labyrinth. K. Wittmaack and Z. Laurowitsch, *Ztschr. f. Ohrenh.*, p. 157, Bd. 65, Heft 23, 1912.

This is a very important contribution based on an extensive experiment of the authors in the examination of microscopic serial sections in over 100 human and a much larger number of animal temporal bones.

There are many valuable hints to determine artefacts and post-mortem changes in the labyrinth and they are easy to be distinguished from actual pathological tissue-changes. Many of these artefacts occur when removing the temporal bone from the skull, during fixation, embedding in celloidin, or making serial sections with the microtome.

Many of the post-mortem changes are due to the tardiness in fixation and the decomposition of the delicate tissues before they are submitted to fixation and detailed histological examination, special stress is laid on the changes which take place in the membranous labyrinth especially in the delicate epithelium of the organ of Corti, nerve-cells and nerve-fibers. The article is profusely illustrated to accentuate the important descriptive matter. Goldstein.

2254

Plan to Promote Talking By Deaf Pupils in Their Homes. I. H. Adams, *Volta Rev.*, p. 346, Oct., 1912.

In order to show parents the progress made by their children one query a day is given the children to be propounded at home and the answer repeated to the teacher the next morning. The questions given are always about the family, so as to make them personal. Ed.

2255

Care of Deaf-mute Children Before the School Age. G. Alexander, *Monatschr. f. Ohrenh. u. Laryngo-Rhinol.*, Bd. 46, Heft 4, p. 483, 1912.

Alexander points out how much more effective the education of the deaf-mute would be if he were not usually in a very sub-normal physical and mental condition when he is taken in charge. The author, therefore, urges the establishment of a school for deaf-mutes who are below the school age where kindergarten work could be combined with medical and other pedagogical attention. Ed.

2259

Congenital Syphilitic Deafness Treated by Salvarsan. G. N. Biggs, *Brit. Med. Jour.*, p. 348, Aug. 17, 1912.

Woman of 22 years to whom three intravenous injections of salvarsan were administrated with a marked improvement in both ears at first. The Wassermann reaction remained positive. Later the hearing disappeared in the right ear, but the left ear continued to improve. After a time the woman suffered an entire relapse which was successfully treated with inunctions of mercury and large doses of potassium iodid. The author points out that this case again proves that salvarsan itself will not cure syphilis but only the local manifestations of the disease. Ed.

2261

Conditions of Success in Speech Reading. E. BOUDIN, *Am. Ann. of Deaf*, p. 187, March, 1912.

This article constitutes chapter 2 of Prof. Boudin's book. Good eyesight, confidence and perseverance on the part of the pupil, and strong personality and thorough knowledge of the mechanism of speech on the part of the teacher are essential to successful results in the study of lip-reading. ED.

2262

Lip-reading System. M. E. BRUHN, *Volta Rev.*, p. 428, Nov., 1912.

In this article Miss Bruhn describes in detail the advantages of the Mueller-Walle system used in her school in Boston since 1901. This method of instruction has also been successfully used at Mt. Airy, at the Pennsylvania Institute for the Deaf and Dumb. ED.

2266

Deafness; Its Cause and Newest Treatment. H. E. COOK, *L'ville Monthly Jour. of Med. and Surg.*, p. 257, Feb., 1912.

Cook states that in 19 out of every 20 cases of ear trouble we find chronic catarrhal deafness. No therapy hitherto tried has proved effective in treating this. The author presents an instrument by which air, oxygen or both can be sent through the Eustachian catheter heated at body temperature or higher. For a very short time following the treatment there is a dullness of the hearing, but this soon ceases and marked improvement can be noted. ED.

2267

Organization and Work of the American Association to Promote the Teaching of Speech to the Deaf. A. L. E. CROUTER, *Volta Rev.*, p. 393, Nov., 1912.

Crouter reviews in detail the history of this organization established twenty-two years ago, the men who have been and are connected with it, the purpose of the organization and its "articles of faith," the auxillary bodies and schools connected with and stimulated by it, the advance and progress in teaching, its official organ and the results obtained during the twenty-two years. ED.

2268

Bilateral Hysterical Total Deafness. R. DOELGER, *Deut. Med Wchnschr.*, p. 1696, No. 36, 1912.

In soldier of 20 the disturbance started with drawing pains in right hip-joint and noises in the ear. Family history of nervous spells with loss of consciousness to which patient was also subject. Organs of hearing normal, but systemic disturbances present. Treatment with potassium bromid resulted in marked improvement. ED.

2280

Systematic Acoustic Exercises. G. FERRERI, *Volta Rev.*, p. 473, Jan., 1912.

According to Urbantschitsch's experiences the hearing of at least one-third of those classed as deaf and dumb can be notably improved by proper systematic acoustic exercises. Of course instruction in lip-reading should precede systematic acoustic exercises. Several illustrative cases are reported. Training the hearing perception by auricular exercises is one of the best ways of improving the accent and modulation of speech in the deaf. Ed.

2284

Lip-reading. French, *Volta Rev.*, p. 433, Nov., 1912.

In this short address to the ninth summer meeting of the American Association to Promote the Teaching of Speech to the Deaf, Mr. French who is himself exceedingly deaf related what lip-reading meant to him and voiced his belief that every young person could learn lip-reading so as to follow intelligently even the most rapid speaker. Ed.

2285

Reform and Instruction of Deaf-mutes. M. Goerke, *Intern. Zntrlbl. f. Ohrenh.*, p. 225, Bd. 10, No. 6, 1912.

In this article Goerke gave an historical sketch of the development and progress in the instruction of deaf-mutes and discusses the cause and value of the various changes made. Ed.

2286

Recent Work in the Interest of the Defective Child. M. A. Goldstein. Editorial in The Laryngoscope, p. 239, March, 1912.

2291

Lip-reading. C. S. Haycock, *Volta Rev.*, p. 9, April, 1912.

In this article Goerke gave an historical sketch of the development and the hearing as well as for the deaf. He shows how thoroughly we can learn to hear with our eyes. The subject is presented in popular style and includes several illustrations showing the expression of the face and position of mouth and tongue in the formation of selected words. Ed.

2292

Determination of Unilateral Deafness by Means of a[1]. L. Haymann, *Arch. f. Ohrenh.*, p. 101, Bd. 89, Heft 2, 1912.

This method of determining unilateral deafness is applicable in but a limited number of cases; the results are not usually reliable. Ed.

2293

Nature and Causes of "Catarrhal Throat" or Hereditary Deafness. C. J. Heath, *Monograph*, 1912.

Heath considers that class of patients who can hear better in a noisy place than in a quiet one—who, in fact, often hear better in the midst of noise than do those whose hearing is normal. (Paracutic deafness). This form of deafness is due to a derangement of aural accommodation, and inflation with air is not indicated. Nine cases thus treated are recorded. Ed.

2295

Mueller-Walle Method of Lip-reading for Deaf Adults. M. C. HOOPER, *Am. Ann. of Deaf*, p. 288, May, 1912.

Miss Hooper, a Philadelphia teacher of the Mueller-Walle method of lip-reading, is a strong advocate of this system. In this paper she outlines the method and gives also a history of its progress. ED.

2298

Frequency of Simulated Deafness in Accidents and the Methods of Detecting it. Z. M. KOMPANEJETZ, *Thesis-Ekaterinoslav*, 1912.

Kompanejetz discusses in great detail the question of simulation, the tests to detect it, and the laws in the various lands concerning accidents; he explains the conditions in Russia where no provision is made by law to protect the workman against accidents. ED.

2302

Syphilis and Deafness. KERR LOVE, *Glasgow Med. Jour.*, May, 1912.

This is a preliminary communication forming only a small part of an inquiry on the prevention of deafness. The Wassermann reaction is employed as the test for syphilis in the deaf children examined. The work here dealt with was carried out at the Glasgow Institution for the Education of the Deaf and Dumb. Of thirty-seven children examined seventeen were cases of sporadic congenital deafness, fifteen of acquired deafness, and five of hereditary deafness. In only three cases was a positive Wassermann reaction obtained. In one of these the deafness was probably, and in the other possibly, due to syphilis, while the third case was not deaf but had paralysis of the muscles of articulation. The inquiry is proceeding. GUTHRIE.

2303

Physiology and Psychology of the Deaf Child. C. D. LOWRY, *Am. Ann. of Deaf*, p. 241, May, 1912.

To study the physiological status 240 children were examined between 6 and 8 years of age and all the deaf children were found to be inferior to those hearing, except that deaf girls usually weighed more than normal girls. Too, deaf girls over 10 years were found, in general, to approach more nearly the physical status of normal girls than deaf boys their normal.

Conditions which produce or are associated with deafness have also a close relation to brain defects, and the mental state of deaf children was found much retarded. Lowry feels that a careful psycho-physical examination of all deaf children should be made and a course of instruction devised to meet each individual need. ED.

2305

Heredity of Deaf-mutism and Importance of Heredity for Pathology. H. LUNDBORG, *Upsala Lekarefoerenings Foerh.*, Vol. 17, Nos. 4-5, 1912.

Of 414 families observed 12.3 per cent of the 2,205 children are deafmutes, which fact, the author feels, substantiates Mendel's law. ED.

2306

Preventable Deafness. W. C. Lyle, *Jour. Med. Assn. of Ga.*, Feb., 1912.

This article is intended chiefly for the general practitioner. The author describes the function of the various parts of the ear in the act of hearing and also points out some of the simple aural affections which, if neglected, result in deafness. Ed.

2307

Pathology of Deaf-mutism. G. Hudson-Makuen, *N. Y. Med. Jour.*, p. 1189, June 8, 1912.

Histological studies of the auditory and phonatory tracts have revealed the morbid anatomy of deaf-mutism, but no conclusions as to the etiology of the affection or its treatment have been ascertained. There have not been very many post-mortem examinations, nor have they been carefully performed. Those thus far made, show that the lesions causing both genital and acquired deafness are for the most part in the labyrinth, the difference between the morbid changes producing hardness of hearing and deaf-mutism in the adult is merely one of degree. In a few cases congenital malformations of the external ear were observed and the middle-ear showed pathological changes; some few cases showed complete absence of both labyrinths. The semi-circular canals are the most frequently affected; next in order come the cochlea and vestibular branches of the auditory nerve; the vestibule is least often involved and in no case did it prove to be the only part affected. Makuen in conclusion pleads for a closer study of the diseases causing the morbid anatomy of deaf-mutism. Ed.

2312

Montessori Method Applicable to the Deaf. A. R. Margulies, *Volta Rev.*, May-June, 1912.

Dr. Montessori was inspired in her work by Sequin's book on the education of the defective child. In teaching the defective child Montessori had miraculous results, the little backward pupils soon catching up with their normal fellows. This led to the conclusion that there must be something wrong with the methods of educating normal children and that while the defective child had been aided in his psychic development, the normal child had been hampered and interfered with. A description of the Montessori method is then given, the fundamental principles of which are: 1. Liberty of the child and the study of its spontaneous manifestations; discipline through liberty; auto-education. 2. Sense-training. 3. Intellectual development as a result of sense-training.

Margulies points out that all these principles are definitely applicable also in the teaching of the deaf child. Ed.

2313

Deafness of Nasal Origin and Treatment by Re-education. A. Maurice, *Arch. gen. de Med.*, p. 293, April, 1912 and *Gaz. des Hop.*, p. 1440, Sept. 10, 1912.

In 582 of 772 cases of aural affection Maurice found a nasal origin. Obstruction in the nose and congestion and hypertrophy of the mucosa of the Eustachian tube is liable to involve the ear. Besides surgical treatment Maurice has employed the kinesiphone, an instrument which he has devised producing 100-4,000 sound-waves per second similar to the human voice but intensified so as to have a massage-like effect. In conclusion the author urges early surgical intervention in cases where nasal disorders exist. Ed.

2316

Problems of the Lip-reader; Experiences in Self-instruction and Teaching of Others. L. I. Morgenstern, *Volta Rev.*, p. 550, Dec., 1912.

This article is written by a lady who grew deaf in early girlhood. In it her difficulties in acquiring lip-reading are given as well as those she encountered in teaching others. Ed.

2319

How to Bear the Burden of Deafness. E. B. Nitchie, *Volta Rev.*, p. 465, Jan., 1912.

Nitchie points out that the deaf as the hearing have the same means of gaining happiness, namely through personal service in progressive and useful occupations. Deafness when present should be openly and frankly acknowledged, and life regulated in the best possible way so as to meet the new conditions. Ed.

2320

How to Practice Lip-reading. E. B. Nitchie. *Volta Rev.*. p. 544, Feb., 1912.

Nitchie gives some specific rules for studying as well as some model words and sentences. Ed.

2322

Diagnosis of Unilateral Deafness by Means of the Lombard Phenomenon. H. Pape, *Ztschr. f. Ohrenh.*, p. 350, Bd. 64, Heft 4, 1912.

Forty-three persons, some hearing, others unilaterally or bilaterally deaf were tested in regard to the Lombard phenomenon, but it was not always found pleasant. Only when the findings are positive can one use them as definite data. Ed.

2324

Can Total Complete Deafness be Diagnosed? R. Ranjard, *Arch. intern. de Laryngol.*, p. 63, July-Aug., 1912.

The author affirms that slight remnants of hearing cannot be distinguished by the usual testing methods, but that they can be detected by Marage's "vocal-siren." This siren is also of service in developing slight hearing capacity. Apropos of this, three cases are reported: one in a woman of 38 years, deaf since the age of one, following a suppurative otitis media; the second in a woman of 53 years who lost her hearing at the age of 16 because of an hereditary syphilitic neuritis acustica; and the third in a child of 9 years deaf since one year following cerebrospinal meningitis. Treated with the "vocal-siren" the hearing power was sufficiently developed in each case so that they could take part in an ordinary conversation. Ed.

2336

Respiration of Deaf-mutes. H. STERN, *Monatschr. f. Ohrenh.*, p. 257, Bd. 46, Heft 3, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1103, Sept., 1912.

2348

Education of the Deaf, Based Upon Impressions Gained Abroad. F. WETTSTEIN, *Am. Ann. of Deaf*, p. 464, Nov., 1912.

The author discusses the progress of deaf-mute education during several centuries and the development of the idea that the deaf, not mentally deficient, can in time become good members of society. He takes up the matter of day-schools, classification in schools, treatment and training, mental, physical and industrial development, homes for adults, and the cottage plan. ED.

2349

How Can Speech-reading be Brought to a Higher State of Perfection? A. WIEDEMER, *Am. Ann. of Deaf*, p. 254, May, 1912.

Wiedemer urges closer attention to clear articulation images and clear lip-reading images. For this reason systematic exercises beginning in the articulation class and continuing through the lower and middle class are necessary. If new words cannot be readily understood from the lips, they should be immediately written on the blackboard and repeated orally. The teacher should speak in as natural a manner as possible, without any exaggerated movements of the mouth. Only after the mechanical difficulties of speech-reading have been mastered should attention be given to the mental side of language. ED.

2351

Tho Deaf; Their Education; Improvement of Conditions, etc. J. D. WRIGHT.

Editorial in THE LARYNGOSCOPE, p. 979, July, 1912; and p. 1390, Dec., 1912.

2352

Where Lip-reading Reaches its Maximum Efficiency. J. D. WRIGHT, *Volta Rev.*, p. 257, Sept., 1912.

Wright points out that fixed methods are as impracticable in the teaching of lip-reading as in other branches of pedagogy. In his experience, however, the best results were obtained when the earlier efforts were directed toward acquisition of correct habits of thought and mental attitude toward language, and after that the technic of art taught.

Wright points out the difficulty for even an expert lip-reader to comprehensibly understand a play, lecture or sermon owing to the conditions of light and movements, but in life, with individuals face to face, this difficulty is removed and it is here that "lip-reading reaches its greatest efficiency." ED.

2353

Application of Eugenics to Deaf-mutism. M. YEARSLEY, *Am. Ann. of Deaf*, p. 23, Jan., 1912.

Total eradication of congenital deafness is wellnigh impossible but the number of cases could be greatly reduced by the application of eugenics. Deaf-mute marriages, union of blood-relations, of alcoholics, of syphilitics, and of those with family taint of insanity should be prohibited. ED.

2359

Abscess of the Cervical Region of the Ear; New Case. L. BAR, *Rev. hebd. de Laryngol. d'Otol. et de Rhinol.*, p. 33, Jan. 13, 1912.

Bar discusses the symptomatology of brain abscess and reports three cases. The first one, a case of abscess of right temporal lobe, and contra-lateral hemiparesis, was operated while in a comatose condition and seems now fully recovered. The other two ended fatally. In the second case indefinite head-pains, slight rise in temperature, slow pulse, loss in weight and in mental activity were the only symptoms pointing to brain abscess. The abscess was not found upon operating and patient died after twenty-four hours. No autopsy. The abscess of the right temporal lobe in the third case was operated when the patient was already in his last stage. Here too there was no autopsy. ED.

2366

Unusual Transmission of Sound Through Tissues of Organism. BOGDANOFF BERESOVSKY, *Rousski Vratch*, Jan. 7, 1912; and *Arch. intern. de Laryngol.*, p. 734, May-June, 1912.

Case of a girl of 18 years, not hysterical, with total deafness for air-conduction. very slight hearing for sound by bone-conduction, and with some signs of vestibular function. When sitting on a couch with her feet crossed under her, and while pressing hard with the palms of her hands on certain portions of the seat she could hear and repeat words and sentences spoken to her at a distance of 70 cm. She could thus also distinguish the tones of an orchester. If seated on a chair whose back, seat and arm-rests were covered with paste-board with a hollow space between and if one spoke into an opening at the top, even in a semi-loud voice she could grasp short words and numbers, especially if the palms of her hands were pressed against the seat. Yet in this position she could not repeat even a short sentence. Experiments with the dentaphon gave negative results. ED.

2371

Malignant Tumors of the Ear. BRINDEL, *Rev. hebd. de Laryngol. d'Otol. et de Rhinol.*, June 15, 1912.

From an analysis of 25 cases Brindel concludes as follows: Primary malignant tumors found in the middle ear are epithelioma, carcinoma and sarcoma, the latter being found more frequently in infancy. Malignant tumors of the tympanum are more rare in the masculine sex. They are frequently grafted on a preceding long-standing otorrhea. The development in most cases is accompanied by sudden violent pain. The objective symptoms are as follows: A tumefaction in front of the tragus (rare); granulations in the canal (frequent); a tumefaction of the apophysis (9 in 23 cases); adenopathy of the sub-maxillary region (one-third of the cases); complete facial paralysis (frequent). The pathologic lesion most frequently found are: Destruction of the internal table (one-third of the cases); more or less marked changes in the labyrinth (five in 23 cases).

In more than half the cases, the diagnosis is not made in the incipiency of the disease, the symptoms being attributed to a recurrent otorrhea. The progress of the disease is very rapid and the prognosis fatal. All attempts at surgical interference should be carefully avoided in cancers of the tympanum, as these give only the most discouraging results. It is therefore important to make a careful diagnosis when such acute symptoms develop in the course of long-standing suppuration of the ear. Finally, the possibility of a malignant tumor being grafted on a tympanum inflamed from a chronc suppuration is an imperative reason for treating as thoroughly as possible such suppurations of the ear. SCHEPPEGRELL.

2372

Histological Examination of the Temporal Bones Diagnosticated During Life as Bilateral Stapes Ankylosis (Otosclerosis). GUSTAV BRUEHL, *Monatschr. f. Ohrenh.*, p. 1289, Vol. 46, Heft 10, 1912.

Essayist considers only that form of ostitis which leads to stapes ankylosis as an otosclerosis and the bony herds closing the oval window are considered typical exclusively.

In the above case, no heredity was found and no labyrinthine atrophy accompanied the bony changes. Mayer's hypothesis combining an atrophy of the labyrinth with the clinical and anatomical picture of otosclerosis is regarded as erroneous.

No matter what the anatomical processes in the temporal bone may be termed, clinically, the disease process is only characteristic, if it ends in otosclerosis, lessened sound-conductions, rigidity of the windows of the drum cavity and especially long stapes ankylosis is produced.

KLEENE (STEIN).

2376

Technic of Auditory Examination in Infancy. P. M. CONSTANTIN, *Jour. of Laryngol.*, p. 353, July, 1912.

Constantin again emphasizes the necessity of recognizing deafness in very young children and in this article indicates methods of procedure by the voice test, instrumental examination and boue conduction by means of the watch test. ED.

2380

Meningococcus in Pus from the Ear. DOERING, *Muench. med. Wchnschr.*, Sept. 3, 1912.

In two of the cases of middle-ear disease the cocci were found in pus from the chronic ear process and in the third in the lumbar puncture fluid. ED.

2386

Effect Upon the Ears of Rapid Transit Through the Hudson and the East River Tunnels. E. P. Fowler, *Med. Rec.*, p. 717, April 13, 1912.

The author feels that variations in air-pressure even greater than that due to very rapid transit through these tunnels should be without effect upon the ears, except in those suffering from catarrhal disturbances or affections of the Eustachian tube. Of course the ear blockage should be relieved immediately otherwise retraction of the drum membrane will occur. If the voluntary or involuntary act of swallowing does not relieve the blocking, something is wrong with the auditory apparatus. Forcibly blowing into the nose (Valsalva's experiment) is an unphysiological and dangerous method of relieving the pressure. Fowler recommends his method of middle-ear insufflation, namely to close the nostrils, attempt to expire through the nose and at the same time swallow. Ed.

2390

Condition of Nose, Throat and Ear as Factor in Exceptional Development. O. Glogau, *Am. Jour. of Obstetr.*, Jan., 1912.

Glogau basis his conclusions on a study of the exceptional children in Herbart Hall. He found nasal obstruction with or without adenoids and tonsils present in both the advanced and backward child. On the other hands defects in the sound-conducting and sound-perceiving apparatus resulting in decreased hearing-power was only found in the backward children; in fact the advanced type showed over-acute audition. This latter fact Glogau advances as a possible explanation of the musical prodigy. The function of the static apparatus of the labyrinth was found to be markedly impaired in the backward child while in the exceptionally bright child an over-irritability was noted. Ed.

2394

Bacteriemia in its Relation to Purulent Otitic Disease. J. H. Guentzer. Original contribution to The Laryngoscope, p. 943, July, 1912.

2395

Some Points in the Early Development of the Ear. L. K. Guggenheim. Original contribution to The Laryngoscope, p. 90, Feb., 1912.

2397

Diagnostic Value of Blood Cultures in Relation to Diseases of the Ear. H. Hays, *Arch. of Diag.*, Jan., 1912.

Hays points out the fact that even in the presence of an intermittent temperature a blood culture may at first prove negative owing to the bactericidal property of the blood. It is only later when the organisms enter the blood stream in profuse quantities that the blood can no longer overcome the bacteria. Ed.

2399

Otological Examination of the Victims of an Explosion in Steinfeld, June 7, 1912. I. Hofer, and O. Mauthner, *Monatschr. f. Ohrenh.*, p. 841, Bd. 46, Heft 7, 1912.

A detailed report is given. The modifications in the ears were due to the air-pressure, the degree of the lesion depending entirely on the distance of the individual from the explosive powder and the position of the head. All those in the open air within 20 meters of the explosion showed excoriations, burns and tears in the auricle, tympanic redness and hemorrhages, ruptures of the tympanum hyperemia or redness of the tympanum and labyrinthine disturbance. Those beyond 200 meters showed epi-tympanic redness and spontaneous nystagmus. Some auricular disturbances were even found in those 1,500 meters removed from the scene. Ed.

2404

Two Peculiar Cases of Foreign Bodies in the Ear and Larynx of Difficult Diagnosis. H. Joliat, *Arch. intern. de Laryngol.*, p. 764, Nov.-Dec., 1912.

The foreign body in the larynx (a piece of bone) and that in the auditory canal (a piece of onion) were so curiously placed that upon examination both organs seems free from foreign bodies. It was only with the sound that the diagnosis was finally made. Ed.

2405

New Hearing Test. M. Kabatschnik, *Monatschr. f. Ohrenh.*, p. 1413, Bd. 46, Heft 11, 1912.

The author's objection to the Rinne and Schwabach tests is that the mastoid bone varies according to whether it is of the eburnated or pneumatic type. Therefore Kabatschnik uses the entire osseous canal for the conduction of sound. He describes the method in detail. Ed.

2407

Dangers Incurred as Result of Non-recognition of Acute Aural Infections with Statistical Data. F. E. Kittredge, *Boston Med. and Surg. Jour.*, p. 358, Sept. 12, 1912.

The paper gives statistical data and the author's own observations relative to "dangers incurred as a result of the non-recognition of acute aural infections." The author draws his data from statistics compiled from reports received from different hospitals in New Hampshire; and he is led to conclude that many deaths ascribed as due to meningitis, were really of mastoid and aural origin, and could have been prevented had they been early diagnosed and treated. Berry (Mosher).

2415

Otogenous Sepsis and Pyemia. F. Ludwig, *Ztschr. f. Ohrenh.*, p. 289, Bd. 65, Heft 4, 1912.

Abstracted in The Laryngoscope, p. 114, Feb., 1913.

2419

Five Cases of Congenital Fistula of the Ear. M. Mangakis, *Arch. intern. de Laryngol.*, p. 52, July-Aug., 1912.

The five cases reported showed no unusual features, except that two cases were bilateral and three on the right ear; Politzer had affirmed that the right ear is most frequently involved. The site of the fistulae was regularly in the anterior portion of the helix just above the tragus. The author holds that congenital aural fistulae are not infrequent. Ed.

2420

Etiology of Noises in the Ear. O. MAYER, *Monatschr. f. Ohrenh.*, p. 201, Bd. 46, Heft 2, 1912.

Usually in subjective tinnitus, affection of the peripheral neurons of the acoustic nerve is found, but the histological variations in this affection as differentiated from those in nerve-deafness without subjective noises are still indefinite. The author denies the truth of Neumann's statement that changes in the spiral ganglion (primary and secondary neuronphagia) are responsible for the subject noises. Investigations made *intra vitam* in a case of leukemia are given in detail. ED.

2421

Artificially Deformed Skulls with Special Reference to the Temporal Bone and its Tympanic Portion. W. MCGIBBON.

Original contribution to THE LARYNGOSCOPE, p. 1165, Oct., 1912.

2422

Aids to Diagnosis in Otology and Their Clinical Significance. JAMES F. MCKERNON, *Yale Med. Jour.*, p. 29, March, 1912.

On October 2, 1912, Dr. McKernon read an abstract of a paper delivered four months previously before the Canadian Medical Society. In it he reviews the laboratory aids otologists are now using and adds the significance his own experience has lead him to attach to each.

Under "Blood Tests" his series covers observations in 400 cases. He finds an increasing white count indicates a good resistance in the patient, while an increasing polymorphonuclear percentage shows an increasing toxic absorption. An increasing white count and a decreasing polymorphonuclear percentage gives the best prognosis, and the opposite forebodes a correspondingly bad outlook; and the author has repeatedly found this test of value when he was in doubt as to the necessity of operative interference. The polymorphonuclear count in uncomplicated mastoiditis he put as 70-80 per cent, while one from 80-96 per cent would indicate an involvement of the neighboring structures. Similarly he has found the taking of blood-cultures of help in diagnosing the presence of a thrombosed lateral sinus. A virulent infection showed growth on the culture-media in 18 hours. If there was no growth inside of forty-eight hours he considered that there was no bacteremia, though two of his cases showed growth after 50 and 58 hours. In his cases the usual infection in a sinus phlebitis is the streptococcus, with an occasional staphylococcus, while he has never recovered pneumococcus from a sinus phlebitis.

The author next takes up "Labyrinthine Tests," and reviews briefly the hearing, fistular, rotatory, and caloric tests used, and sums up with: "when we have reason to suspect an invasion of the labyrinth, the hearing should first be tested. The presence or absence of spontaneous nystagmus should be noted. The presence of a fistula should be looked for and careful observations made of the reactions to the rotation and caloric tests." He makes then the rather broad conclusion that "on the results obtained from these various tests, a diagnosis of invasion of the labyrinth can be made. The extent of such invasion, whether diffuse or circumscribed can be determined, and the nature of the operative measures necessary for relief can be mapped out."

In considering "Lumbar Puncture," he remarks that "during the past two years early and frequent examination of the cerebro-spinal fluid have proved of utmost value in making an early diagnosis of purulent meningitis."

Radiology he finds of more use in the chronic and obscure otitic conditions. A knowledge of the appearance of a normal and of a diseased mastoid in a radiogram is considered essential to the accurate reading of the plates. Radiograms of a thrombosed sigmoid sinus in his experience show up very indistinctly unless there is pus present.

The author closes this concise and interesting paper by emphasizing that these tests "should in no way supplant the clinical evidence presented by the patient, but that in the difficult and obscure cases their use may lead to earlier accurate diagnosis, and thus the harmful or fatal delay in awaiting classical symptoms may be avoided." BERRY (MOSHER).

2423

Further Remarks on Question of Sound-Localization. J. MEYER, *Monatschr. f. Ohrenh.*, p. 449, Bd. 46, Heft 4, 1912.

From experiments on infants and animals Meyer concludes that sound-localization is a function of the sense of hearing but arises in the higher centers and has nothing to do with the cerebellum. Animals and infants localize known sounds better than the unknown. ED.

2430

Technic of Microscopical Examination of the Ear. R. J. POUGET, *Arch. Intern. de Laryngol, d'Otol., et de Rhinol.*, p. 801, May-June, 1912.

This is the author's complete technic as modified after studies with Siebenmann and Manasse. The necessity is urged of obtaining the material within a few hours after death if best results are desired. A method of extracting the temporal bone post-mortem with no disfigurement is described. For fixation of tissues the author uses in routine work equal parts of Mueller's fluid and of 10 per cent formalin. Decalcification is accomplished in 5 per cent nitric acid in 70 per cent alcohol, to which is added 0.6 per cent sodium chlorid. Because of its better retaining in position the delicate portions of the membranous labyrinth celloidin is preferred to paraffin for embedding. Hematoxylin and eosin may be used for staining, or preferably hematoxylin and Van Gieson after the manner of Wright. Curtis slightly modified by Pouget. Microphotographs are appended. EDGAR (GOLDSTEIN).

2442

Report of Case; Sequestration of Pars Petrosa. G. A. SHEPARD, *Jour. of Ophth. Otol. and Laryngol.*, p. 64, Feb., 1912.

In a case of chronic suppurative otitis media followed by acute mastoid symptoms the following clinical picture was presented: Total loss of hearing, marked swelling of side of head extending from frontal eminence to the occiput, total facial paralysis, restricted motion of maxilla, severe pain, partial paralysis of lower extremity of same side; temperature, 100.6°; pulse, 80; respiration, 18.

At operation extensive necrosis of the bone was found involving the anterior and posterior walls of the canal, of the glenoid fossa, the superior and interior walls of tympanum and antrum exposing the middle and posterior fossae for over two inches. Facial nerve was absent from its entrance into the tympanum well down in the posterior wall at which point the frayed ends of the nerve could easily be seen.

The large sequestrum was removed in a number of periods from time of operation, January 14, until the removal of the final portion in April of the following year. This case is of interest because of the extensive involvement of bone tissue and the final recuperative power.

GOLDSTEIN.

2455

Tinnitus, Prognosis and Treatment. K. WITTMAACK, *Deut. med. Wchnschr.*, Sept. 26, 1912.

Cases in which the hearing was unimpaired were given the most attention. When the sound is rhythmic with the pulse it is usually due to the perception of an arterial murmur at some point in the body and treatment should be directed to the cardio-vascular apparatus or blood. Tinnitus due to neurasthenia or hysteria should be treated by diverting the patient's attention, since these intrinsic sounds are more noticeable in a quiet environment. Sedatives, bromids and valerian are of value in the treatment. In neurasthenic tinnitus potassium iodid, systematic sweats, arsenic or thyroid treatment may be effective. Hot foot or sitz-baths, induced hyperemia by massage, superheated air electric measures or lumbar puncture may also produce good results. ED.

2459

Malignant Neoplasms of the Ear. A. ZEBROWSKI, *Monatschr. f. Ohrenh.*, p. 217, Bd. 46, Heft 2, 1912.

Case of operated epithelial carcinoma of the middle ear following a chronic middle-ear suppuration which spread to the dura and thus ended fatally. Detailed pathologic-anatomical and microscopical data are given in connection with the clinical history. ED.

2462

Radical Operation of the Ear with Closure of Wound Without Plastic. A. BLUMENTHAL, *Ztschr. f. Ohrenh.*, p. 68, Bd. 66, Heft 1-2, 1912.

Ten cases are reported in which the author left the canal walls intact and closed the posterior wound, leaving only a small drainage opening at the bottom. The ear speculum is employed in the after-treatment. The objection to the plastic operation is that it produces deformities in the canal. ED.

2466

Relief of Tinnitus by the Use of Nitrate of Silver Applied Within the Eustachian Tube. W. C. BRAISLIN, *Ann. of Otol.*, p. 773, Sept., 1912.

The tinnitus improved by this treatment is that of tubal origin; if its cause be immobility of the stapes, labyrinthine or auditory nerve-lesions, lesion of the nervous centers, digestive, circulatory or general disease relief of congestion about the tube is all that can be expected by this local application. ED.

2470

Vaccines in Suppurative Otitis Media. A. C. Christie, *Med. Rec.*, p. 561, Sept. 28, 1912.

Christie feels that vaccine therapy is only indicated when local methods have failed and that, even under such conditions, it should be employed in conjunction with other treatment. In chronic cases the efficiency of this therapy is determined by the amount of necrosis and by the condition of the circulation in the mastoid; but even in cases of long-standing this therapy has proved advantageous. In sub-acute cases the best results are obtained. Ed.

2477

Case of Intra-cranial Division of Auditory Nerve for Persistent Aural Vertigo. C. H. Frazier, *Surg. Gynecol. and Obstetr.*, Nov., 1912.

In spite of only partially successful results Frazier holds that this procedure offers great relief in selected cases. The incision is made as for a unilateral sub-occipital craniectomy. Ed.

2482

Present Status of Vaccine (Bacterins) Therapeutics in Purulent Diseases of the Ear. R. H. Huvelle, *N. Y. State Jour. of Med.*, May, 1912.

In cases of chronic purulent otitis media the author feels that vaccines are valuable as an aid in the treatment and should be given at regular intervals, suitable to each case. Huvelle feels that within a year the ear will be dry, except in unusually long-standing chronic cases. In cases of sub-acute purulent otitis media vaccines abbreviate convalescence and abort the familiar complications of the suppuration. If used in post-operative mastoiditis the wound healed much quicker. Cases of furunculosis and perichondritis of the auricle gave excellent results. In cases of otitic meningitis little has as yet been accomplished. The technic of preparing the vaccine is indicated. Ed.

2489

Prominent Ears. R. T. Morris. *Med. Rec.*, p. 561, March 23, 1912.

Abstracted in The Laryngoscope, p. 761, May, 1912.

2497

Anakinetic Re-education of the Ear by the Electro-phonic Method. O. Raoult, *Arch. intern. de Laryngol.*, p. 413, March-June, 1912; and *Rev. med. de l'Est*, April 15-May 1, 1912.

Abstracted in The Laryngoscope, p. 198, March, 1913.

2504

Therapy of Subjective Noises. K. Theimer, *Oesterreiche Aerzteztng.*, No. 7, 1912.

From a detailed study of many cases of tinnitus, of which seven are reported, Theimer concludes that otosclerosis is a factor in this disorder. For this reason he uses bromin (36.6 per cent), phosphite (13.52 per cent) and cimicifugin (6.66 per cent) in tablet form, administering at first one tablet three times daily increasing to three tablets fifteen times a day. Incipient cases give the best results. Ed.

2511

Acidum Pyrogallicum Oxydatum in Diseases of the Ear, Nose and Throat As Well As In Therapy of Tuberculosis, Carcinoma and Sarcoma. S. VON STEIN, *Ztschr. f. Laryngol.*, p. 879; Bd. 5, Heft 5, 1912; and *Prakt. Vratch*, 1912.

In rhinitis acuta, chronica, hypertrophica, ozena, empyema of the accessory sinuses, pharyngitis and laryngitis catarrhalis, tuberculosis of the pharynx and larynx, in acute and chronic suppurative otitis media, in the presence of labyrinthine symptoms in perforation of the drum membrane and granulations in the tympanic cavity the author uses a solution of pyraloxin (0.02), aqu. foeniculi (20.0), aqu. biboracis (20.0) with excellent results—decrease of inflammation and secretion, improved nasal respiration, etc. Pyraxolin (2.0), natr. borac. (3.0), aqu. dest ad. (100) is given internally. In some cases of tinnitus improvement was marked; in cases of otosclerosis with hyperemia good results were obtained as well as upon the general condition in cancroid luprous tuberculous and sarcomatous conditions. ED.

2518

Remarks on Bone Transplantation in the Post-operative Mastoid Wound. M. J. BALLIN, *Am. Medicine*, p. 632, Nov., 1912.

Ballin strongly advocates this procedure in cases in which there is a clean granulating wound. He reports one case in which the wound had closed and has remained closed, five days after a piece of bone with the living periosteum from the crest of the patient's tibia had been transplanted into the wound. ED.

2521

Spontaneous Abnormal Fistulae in Mastoiditis. M. A. BEVEUGET, *These de Bordeaux*, 1912.

The author studies the different means of fistulization. The pus can infiltrate from the side of the external auditory canal and resembles a suppuration of the canal itself or of the middle ear. When pus collects in the mastoid cells or in an extra-dural abscess the tympanum is usually cicatrized and the middle ear intact. The fistula may also arise on the wall of cranial cavity and provoke an extra-dural abscess which in its turn produces a meningitis or cerebral abscess. Along the lateral sinus it may result in a thrombo-phlebitis, a pyemia, rupture of the sinus, etc. Early diagnosis is urgent. The author feels that it is better to open a mastoid too soon than to let a patient die for want of intervention. ED.

2522

Primary Suture After Mastoid Operation. A. BLUMENTHAL, *Deut. med. Wchnschr.*, Jan. 18, 1912.

Blumenthal describes in detail a technic by which the time required for the after-treatment of the mastoid wound is shortened, and a substantial cicatrix obtained. Five cases are reported. One of the chief requisites for primary closure of wound is that the focus of infection be thoroughly destroyed. After removing all necrotic tissue the upper edges of the wound are cramped together and sewed; in the lower part which is left open a caoutchouc drain with openings on the sides is inserted and pushed up into the wound. This drain is left in situ for three or four days. After that it is removed daily until the deeper parts of the wound close. The external edges of the wound can then be made to heal by applying sterile bandages. The time required for the entire cure varies from sixteen to twenty-four days. ED.

2526

Case of Acute Mastoiditis. J. CONSIROLES, *Rev. hebd. de Laryngol.*, p. 337, March 23, 1912.

Abstracted in THE LARYNGOSCOPE, p. 954, July, 1912.

2528

Atypical Mastoiditis. S. G. DABNEY, *L'ville Monthly Jour. of Med. and Surg.*, p. 143, July, 1912.

In two cases the only symptoms were long-standing discharge from the ear, sagging of the upper posterior canal wall, and slight tenderness at the posterior inferior mastoid border in one, and over the antrum in the other case. In the third case there had been acute painful inflammation of the ear with discharge, but this had stopped and the hearing was but slightly impaired. The patient felt depressed and had sharp pains on the side of the head. Two cases were in men 50 and 60 years respectively; the other in a child of 5 years old. ED.

2537

Mastoid Sequestra Containing All Three Semi-circular Canals with a Report of the Subsequent Labyrinthine Reaction. J. M. INGERSOLL.

Original contribution to THE LARYNGOSCOPE, p. 1112, Sept., 1912.

2545

Case of Primary Tuberculosis of the Mastoid Process. K. LUEBBERS, *Passows Beitr.*, Bd. 5, Heft 5-6, p. 317, 1912.

At the autopsy no other tubercular focus could be found which would account for the ear infection as a secondary one, and it must, therefore, be regarded as primary. The Eustachian tube, tympanic cavity and radically operated mastoid cavity were free from tuberculosis, the tubercular changes were most apparent in the region of the transverse sinus and of the jugular bulb. From the latter a fistula surrounded with tubercular masses accompanied the carotid to the anterior plane of the petrous bone, approaching the Eustachian tube at its entrance in the tympanum. ED.

2549

Typical and Atypical Mastoiditis. G. W. MCDONALD, *Jour. Ophth. Otol. and Laryngol.*, p. 7, Jan., 1912.

Three cases are reported. In the first the mastoid involvement followed an attack of grippe; in the second, acute suppuration of the middle ear; in the third case the original symptoms were varying pains in head. Three and a half months after the onset of the symptoms the mastoid was opened and drained. In the interim every possible diagnosis of the insomnia and pain had been made. All patients recovered. ED.

2551

Some Mastoid Experiences. C. M. MILLER.

Abstracted in THE LARYNGOSCOPE, p. 1051, Aug., 1912.

2552

Trans-illumination of the Mastoid. H. P. MOSHER.

Original contribution to THE LARYNGOSCOPE, p. 38, Jan., 1912.

2562

X-ray Diagnosis of Mastoid Disease. H. PIRIE, *Arch. Roentgen-Rays*, Sept., 1912.

Pirie states that for the radiography of mastoid cases the patient should lie prone on a couch, with the head (and the plate beneath it) on an inclined plane at 25 degrees with the couch. The head of the patient is rotated 90 degrees, so that he looks directly to his side. The source of rays is above the head, and the perpendicular ray is made to fall at a point 2 in. above the highest point of the pinna of the ear. The glass of the tube should be 9 in. away from the hair. The exposure required will turn a Sabouraud pastille placed at 2 cm. from the glass to one-third of the B. tint. Skiagraphs of both mastoids should be made, under exactly the same conditions as to hardness and quality of the tube. The radiograph of the normal mastoid shows the articulation of the lower jaw; the posterior border of its ascending ramus; the auditory canal behind (separated by a quarter-inch from) the articulation, the air cells forming a reticulum extending from the articulation backwards; the petrous bone surrounding the auditory canal; a faint indication of the outline of the lateral sinus running through the posterior half of the cells; the foramen magnum as an elliptical opening with part of the first vertebra crossing it; and the outline of the pinna of the ear. Acute mastoiditis shows air cells obscured, though still faintly seen; outline of lateral sinus, perhaps a little more definite than normal; greater intensity of the petrous bone and of the whole mastoid region. Chronic mastoiditis shows complete absence of the air cells; the standing out of the petrous bone as a very dense, roughly triangular area, its posterior border forming part of the sharp crescent-shaped line, corresponding with the upper and anterior border of the lateral sinus; and, frequently the lateral sinus in very good definition.—*Ex.*

2563

Acute Mastoiditis Complicated by Tic Douloureaux. G. H. POWERS, *Boston Med. and Surg. Jour.*, p. 380, March, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1361, Dec., 1912.

2573

Case of Dry Necrosis of the Mastoid Cells. O. WILKINSON, *Med. Rec.*, p. 1188, June 2, 1912.

Woman of 25 years complained of pain in the head, behind the eyes, behind the head and on the base of the skull; also nausea and vomiting. Cicatrix on drum membrane from a suppuration which lasted from her 8 to 15 year. Temperature, 98.6° to 100° F. Upon opening the mastoid the external bone was found to be very brittle; the bony walls of the cells were dry and as breakable as in the skeleton; no pus; no blood in bones until aditus ad antrum was reached. After operation all symptoms disappeared.

ED.

2579

Case of Afebrile Sinus Thrombosis and Cerebellar Abscess Complicating Acute Otitis Media in an Adult. J. AUERBACH.

Original contribution to THE LARYNGOSCOPE, p. 1367, Dec., 1912.

2583

Aid for the Diagnosis of Conditions Associated with an Obstruction to the Outflow of Blood from the Brain; With Special Reference to Sinus Thrombosis of Otitic Origin. S. T. CROWE, *Bull. Johns Hopkins Hosp.*, Nov., 1912.

Any acute obstruction to the overflow of blood through the sigmoid sinus, jugular bulb or internal jugular vein on one side, may be diagnosed by means of the following test. The test is based on purely mechanical principles. From examination of 500 normal individuals the following conclusions are arrived at: 1. No appreciable evidence of stais is seen in the retinal or superorbital veins when *one internal jugular is compressed with the finger.* 2. *Pressure on both internal jugular veins at the same time* produces a marked dilatation of the veins of the fundi and of the anastomotic vessels connecting the inter-cranial with the extra-cranial venous circulation. 3. When the pressure is suddenly released on one side, while it is maintained on the other, the engorged veins of the anastomotic system and the fundi will immediately empty. Any marked difference from the above results indicates either an anomaly of the inter-cranial venous circulation, or some pathological condition which is obstructing the outflow of blood from the brain.

PACKARD.

2590

Sinus Thrombosis as a Complication of Mastoiditis. J. H. FOSTER, *Tex. State Jour. of Med.*, March, 1912, and *Jour. Ophth. and Oto-Laryngol.*, July, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1221, Oct., 1912.

2593

Case of Thrombosis of the Lateral Sinus, Resection of the Internal Jugular Vein, Spontaneous Evacuation of an Abscess of the Posterior Fossa Through the Foramen Jugulare; Recovery. PERRY G. GOLDSMITH, *Can. Prac. and Rev.*, Nov., 1912.

This paper is a brief but interesting account of thrombosis of the lateral sinus occurring in a man, aged 49, as a sequel of periodical discharge from the ear of eight years duration. The one was of the billiard-ball variety, pus in small quantities, antrum discovered with roof and posterior walls absent and replaced by granulating tissue. The sinus was discolored and soft and occlusion was self-evident. The subsequent course of the case was marked by: (1) A severe septic pharyngitis and laryngitis; (2) Escape of a large collection of pus through the neck wound, the abscess in the posterior fossa; (3) Occurrence of acute labyrinthitis and facial paralysis—weeks after operation.

WISHART.

2596

Case of Primary Jugular Thrombosis. I. M. HELLER, *Ann. of Otol.*, p. 380, June, 1912.

A girl of 7 years with chronic suppurative otitis media of three years standing had had a simple mastoid operation on right ear, and three weeks later a radical mastoid with exenteration of labyrinth on same side. Result, no discharge, but total deafness. Five months later, left ear-ache, fever and chills, but no swelling, and no tenderness. Mastoid operation exposed apparently normal sinus covered with only 1 mm. of bone. Only a drop or two of pus near bulb after retracting sinus. Recurrence of chills and fever; therefore, jugular though apparently normal, was ligatured. Fever continued several days while pus appeared at neck-wound and in sinus-wound with negative bacteriological findings. Recovery, but total deafness. EDGAR (GOLDSTEIN).

2606

Jugular Pulse. V. MARAGLIANO, *Gaz. degli Osped. e delle Clin.*, Oct. 6, 1912.

The author finds that jugular pulsation may be occasionally felt in persons with sound aortas while it may be absent in persons with marked dilatation of the aorta or with an aneurysm. When the aorta is a little nearer the sternum or when the heart beat is exceptionally strong it may be observed. ED.

2608

Thrombosis of the Cavernous Sinus with Report of Case. H. H. MARTIN, *Ophthal.*, p. 183, Jan. 1912.

Following a furuncle in the nose a patient developed swelling of the external canthus, pupillary dilatation, chemosis, paralysis of the external muscles, edema of the fore-head, cheek and orbit, and an intense venous dilatation. These symptoms developed also in the other eye some days later. Temperature characteristic of infection; cephalalgia and cecitis; tortuous vein at fundus of eye. Autopsy revealed a septic thrombosis of the cavernous sinus. ED.

2612

Report of a Case of Sinus Thrombosis, Excision of the Internal Jugular, with Recovery. CHAS. W. RICHARDSON.

Original contribution to THE LARYNGOSCOPE, p. 1117, Sept., 1912.

2630

Subdural Abscess, Thrombosis of the Lateral Sinus and Diffuse Osteomyelitis of the Skull Bones Treated with Vaccines; Recovery. T. H. BUTLER, *Brit. Med. Jour.*, p. 602, March 16, 1912.

Man of 25 years to whom anti-pneumococcus and anti-staphylococcus sera were administered and later vaccine. After many operations patient recovered. ED.

2637

Brain Abscess of Otitic Origin; A Study of Twenty-one Cases Coming Under the Personal Observation of the Writer. E. B. DENCH, *Ann. of Otol.*, p. 737, Sept., 1912.

Of the collated cases, twenty-one in number, seventeen were instances of temporo-sphenoidal abscess, and four were cases of cerebellar abscess. This experience controverts the statement made by certain observers, that cerebellar abscess, of otitic origin, is of more frequent occurrence than temporo-sphenoidal abscess from the same cause. Of the temporo-sphenoidal abscesses, seven were on the right side, and ten upon the left side. Of the cerebellar, two were upon the right side and two upon the left side.

The avenues of infection are of particular interest to otologists. Of the temporo-sphenoidal abscesses, in nine cases infection occurred through the tympano-mastoid roof. In one case the abscess was found in the Island of Reil, and so must have been of metastatic origin. In another, an abscess was found in the temporo-sphenoidal lobe following a decompression operation, at which time the temporo-sphenoidal lobe was explored for a possible abscess. As the purulent discharge from the ear still continued, in this case, it is possible that the subsequent abscess developed as the result of infection in the brain tissue, which had been broken down at the previous exploratory operation.

Of the cerebellar abscesses, in three cases infection occurred through the lateral sinus. In the fourth case of cerebellar abscess, there was a complicating neoplasm of the auditory nerve trunk, the cochlea being completely destroyed by the neoplasm tissue (fibro-sarcomatous in nature). Infection in this case probably occurred through the internal auditory meatus, although the exact avenue of invasion could not be made out.

The relative frequency with which brain abscess followed acute and chronic middle-ear suppuration respectively was as follows: In four of the twenty-one cases, the duration of the suppuration was unknown. In seven there was a history of chronic suppuration, while in ten intracranial involvement followed an acute suppuration of the middle ear. In two of the acute cases there was a period of latency—in one case extending over ten years, and in a second case, extending over a period of one month. In four cases, following acute otitis media, the mastoid antrum was exceedingly small and the middle cranial fossa very low. This anatomical fact may explain the development of a suppurative focus within the temporo-sphenoidal lobe following acute otitis in these particular cases.

The symptomatology was discussed, as illustrated by the cases presented. The results of operative methods in the different cases were as follows: Of the seventeen temporo-sphenoidal abscesses, ten died and seven were cured. Of the cerebellar cases, three died and one was cured. The cause of death in the fatal cases was due to purulent meningitis, excepting in two instances in one of which death was due to pneumonia, in the other the case was complicated by a neoplasm involving the auditory nerve trunk. The operative technic employed was described.

2638

Differential Diagnosis Between Brain Abscess and Sinus Thrombosis and the Treatment of These Conditions. EDWARD B. DENCH, *Jour. Ophth. and Oto-Laryngol.*, p. 400, Dec., 1912.

The importance of the subject is shown in the frequency of intracranial complications resulting from middle-ear disease. In the review of 10,000 cases one patient in every 88 presented some such sequelae.

The two pictures are very distinct. In brain abscess there is moderate temperature in the early stage, then a latent period, and a final terminal stage with high or low temperature and characteristic brain symptoms. The pulse is slow in every stage but the initial one. The polymorphonuclear blood-count is frequently over 80.

In sinus disease the general symptoms are trivial and the temperature is characteristic; that is, a sudden and high temperature rise followed by a rapid fall. There is an absence of cerebral symptoms as in abscess, a rapid pulse rate and the differential blood-count may be high, but in the majority of author's cases the percentage has not been much elevated. Positive blood culture is valuable but negative findings do not exclude sinus infection.

In the treatment the author believes that where we have symptoms of profound sepsis from a sinus infection, even though fluid blood flows from both ends of the opened sinus and the jugular vein should be excised in every instance not higher than the level of the omohyoid muscle. This excision treatment is also urged in all cases of clot with positive blood cultures. STEIN.

2640

Tumor Involving the Base and Substance of Left Temporal Bone. F. X. DERCUM, *Jour. Nerv. and Ment. Dis.*, Jan., 1912.

This tumor situated in the left temporal lobe caused aphasia and partial para-aphasia, word-deafness, word blindness and agraphia, the latter in spite of the fact that the frontal lobe was not involved. Dercum explains the agraphia through destruction by the tumor of the inferior longitudinal fasciculus which produced alexia and indirectly agraphia. ED.

2642

Diseases of the Ear Which Lead to Brain Abscess. MAX A. GOLDSTEIN, *Jour. A. M. A.*, p. 1101, Sept. 21, 1912.

Goldstein describes the anatomy of the middle ear contributing in case of otitic disease to the formation of brain abscess. In summing up the factors favoring the invasion of the cavum tympanum by pathogenic germs, he first calls attention to the lymphatic and vascular connections between the nasal pharyngeal areas and the lymphatic ring of Waldeyer and the tympanic cavity and then explains the mechanism of middle ear disease, the blocking of the exits for pus and the vulnerable areas which are then attacked. When the drum does not give way, the most vulnerable points for infection to reach the brain tissue and produce abscess are through the tegmen tympani and tegmen antri and the labyrinth. In the two former the thin plates of bone between the ear cavity and the cranial fossa are very liable to be eaten through in the process of suppuration. In the labyrinth it has been made clear within the past few years that a frequent source of invasion of the cerebral fossa is through a pathologic focus at the foot-plate of the stapes, the development of an acute labyrinthitis and extension of the process into the cochlea and either directly into the deeper cerebral fossa or by following the sheath of the auditory nerve to the cerebellar area. There are occasional cases of mastoid and cerebral invasion which defy the most careful diagnosis and which must have occurred by way of the blood or through lymphatic channels, but these are fortunately rare. The distinction between acute and chronic otitis as causing brain abscess is not considered important by the author, as in either form brain suppuration may be induced.

2643

Case of Otitic Brain Abscess in a 57-year-old Diabetic Woman, Cured by Operation. HAMMERSCHLAG, *Wr. med. Wchnschr.*, No. 12, 1912.

Acute middle-ear suppuration in right ear; eight days later symptoms of cerebral disturbances; visual disorders. At intervals, several times an hour, the patient would get a cramp which would twist her head to the left for about thirty seconds, the eyes would be fixed to the left, and horizontal nystagmus to the left would also be present. Soon these attacks appeared every five minutes and were complicated by grasping motions in the hands, flexion in the elbows, and left hemianopsia. Fundus of the eye normal. Two days before operation she had attacks during which the head was twisted toward the right, the eyeballs were fixed toward the right in an upward position, and the nystagmus was toward the right; also complete cortical blindness. Three months after operation all symptoms had entirely disappeared. ED.

2645

Temporo-sphenoidal Lobe Abscess, Operation and Recovery. NEWBOLD JONES, *Can. Prac. and Rev.*, Oct., 1912.

A report of a case where the patient, who had been suffering for nearly four weeks from an acute right side mastoiditis, entered hospital unconscious with a temperature of 100° and a pulse of 60. There was a large perforation in the membrane but no bulging of the posterior superior wall. Anterior to the auricle above the zygoma was a fluctuating tumor one inch in diameter.

The mastoid was extensively disorganized, but the sinus normal. The roof of the antrum was removed, and four drachms of blood and pus removed from within the dura. Recovery was uneventful. WISHART.

2648

Present Status of Diagnosis of Cerebellar Tumors and Abscesses. O. KUTVIRT, *Rev. f. Neuropsychopath.*, 1912.

According to his experience markedly accelerated heart-action, when the patient sits up (orthostatic tachycardia), is a prominent symptom in cases of diminished intra-cranial pressure. Both branches of the eighth nerve should be tested. Otologic data is valuable and Kutvirt favors the Barany method of examining the cerebellum. ED.

2659

Intra-cranial Hemorrhage in Acute Otitis Media Simulating an Incipient Meningitis. H. RECKEN, *Ztschr. f. Ohrenh.*, p. 4, Bd. 66, Heft 1-2, 1912.

In the case of a child with bilateral, uncomplicated acute otitis with normal temperature and pulse sudden unilateral cramps and loss of consciousness; meningitis suspected. Lumbar puncture findings pointed to a trauma which the history affirmed. The symptoms finally disappeared after lumbar puncture; at first, however, the cramp shifted to the opposite side and the temperature was raised. ED.

2665

Paths of Encephalic Infection in Otitis. CHRISTOPHER TAYLOR, *Brain*, Nov., 1912.

Dr. Taylor after discussing in detail the possible pathways of infection in the different intracranial complications of otitis, states that: Infection through vascular channels appears to be responsible for most cases of lateral sinus thrombosis, while vascular infection is a cause of extradural and brain abscesses in a large number of cases. Many cases of extra-dural abscess are due to disease of the petrous bone, especially its posterior surface and tegmen. Cerebral and cerebellar abscesses may be due either to direct contact of the brain with diseased dura through a perforation or indirectly through the blood. Cerebellar abscess is often secondary to infective labyrinthitis, extension taking place along the nerve sheath or in the region of the posterior semicircular canals. Leptomeningitis is either secondary to a gross intracranial lesion, labyrinthine or vascular infection from middle ear direct. Infection of the labyrinth is responsible for many cases of cerebellar abscess and meningitis of otitic origin. T. H. HALSTED.

2666

The Influence of Dural Disease on Blood-clotting. ERNST URBANTSCHITSCH, *Monatschr. f. Ohrenh.*, p. 1097, Bd. 46, Heft 9, 1912.

The above article is summarized thus: We possess in Wright's blood-clotting method, the only one which ascertains the minutest differences in brief time.

All cases of pyemia show distinct and often greatly accelerated blood-clotting tendency. It is impossible to determine from the rapidity of clot-formation whether a sinus thrombosis is obturating or lateral, sterile or infected. Rapid clotting is not pathognomic of thrombosis, other intra-cranial complications (brain abscess) act similarly. All cases of sepsis show normal or retarded clotting.

The determining of blood-clotting in otology is valuable in a differential diagnosis between pyemia and sepis, and possibly enables us to exclude a thrombotic process in occult cases. Medicamentous influences on clotting do not change a pyemic process. KEENE (STEIN).

2672

Recognition of Acute Otitic Meningo-encephalitis. G. ALEXANDER, *Arch. f. Ohrenh.*, p. 255, Bd. 89, Heft 3-4, 1912.

Seven cases of otogenous meningitis are reported in which recovery followed surgical treatment which consisted in the removal of the tympanic mastoid or diseased labyrinth together with exposure of the dura mater of the middle and posterior fossae, and lumbar puncture. The last procedure is of value both from a diagnostic as well as from a therapeutic viewpoint. In all of Alexander's cases, however, the fluid was sterile. These cases show the value of early recognition and vigorous surgical treatment. ED.

2673

Some Remarks on Otitic Purulent Lepto-meningitis and Brain Abscess with Report of a Case. A. BRAUN, *Am. Medicine*, p. 46, Jan., 1912.

The most common cause of brain abscess is disease of the middle ear especially chronic suppuration with cholesteatoma formation. The only treatment is operation, which may be performed (1) through the mastoid; (2) through the squama of the temporal bone; (3) by a combined route through the mastoid and squama. Braun discusses the technic of each method but especially of the third which he considers the ideal procedure. The operation for cerebellar abscess and the diagnosis and the prognosis of the various lepto-meningitis are also detailed. In the case reported the patient recovered even though operated in a semi-moribund condition. ED.

2678

Pneumographic Study of Respiratory Irregularities in Meningitis. L. A. CONNOR AND R. G. STILLMAN, *Arch. of Int. Med.*, Feb., 1912.

In 32 cases of tubercular meningitis and in 9 of 11 non-tubercular cases disturbances in the respiratory rhythm were noted. These disturbances often appear early; they are either of the Cheyne-Stokes type (in 53 per cent of the cases) Biot's (in 27 per cent of the patients) or of an undulatory type (found at some time in almost every case).

As to the diagnostic value of these findings: The Cheyne-Stokes type in children is seen more frequent in meningitis than in any other disease, but in adults it has little diagnostic value; Biot's breathing is usually pathognomonic of meningitis; the undulatory type associated with other diseases.

The authors have found no relationship between these respiratory disturbances and those in the pulse; nor were these irregularities associated with stupor or coma. ED.

2685

Meningitis; Nature, Cause, Diagnosis and Principles of Surgical Relief. An Experimental and Critical Study. S. J. KOPETZSKY.

Original contribution to THE LARYNGOSCOPE, p. 797, June, 1912.

2702

Epithelial Grafting As Means of Effecting Cure and Rapid Healing of Cavity Left by Complete Mastoid Operation. C. A. BALLANCE, *Lancet*, Aug. 17, 1912; and *Ann. of Otol.*, p. 598, Sept., 1912.

Ballance points out that the advantages gained by grafting the mastoid cavity are as follows: (1) Rapid healing of the entire wound, bone, cartilage, and soft parts, on ordinary surgical principles. (2) Immediate protection of the raw bone surface by a layer of living epithelium, and, in consequence, elimination of the pain and discomfort otherwise incidental to treatment by tamponing and of the liability to reinfection of the bone. (3) Considerable shortening of the time during which specially skilled attendance is necessary. Two weeks after the grafting operation the bone granulations are all covered by visible living epithelium, and the rest of the attendance may safely be left to the family doctor. (4) Improvement in hearing. When the graft has been cut very thin and successfully applied healing takes place at once under the best conditions. The graft, except its inner layer of living cells, separates by aseptic molecular necrosis. The fenestrae become covered by the thinnest possible layer of tissue, and consequently the hearing is generally very good, and is certainly much better than when granulation has long been present over the fenestrae. The above advantages are almost invariably obtained when all bone disease has been removed and the raw bone surface has been covered with a single graft, cut sufficiently thin, and accurately applied.—*Ex.*

2703

Improved Technic for Examining the Cerebro-spinal Fluid. H. BRAUN AND HUSLER, *Deut. med. Wchnschr.*, June 20, 1912.

The authors have employed the Sachs-Altmann hydrochloric acid method of determining pathologic conditions in the cerebro-spinal fluid in 41 cases and find the test simple and reliable. The proportions are 1 cc. cerebro-spinal fluid to 5 cc. n/300 Hcl. Normal fluid persists limpid while the fluid becomes distinctly turbid in cases of meningitis especially in tuberculous meningitis. ED.

2706

Results of Experimental Punctures of the Brain. DESIDERIUS DORNER, *Monatschr. f. Ohrenh.*, p. 528, Bd. 46, Heft 5, 1912.

The author quotes Reinking regarding the dangers of exploratory punctures of the brain. These are: (1) Injury to the ganglion cells of the cortex; (2) Injury to the great central ganglia; (3) The danger of injuring the lateral ventricles; (4) Injury to the larger vessels; (5) Spreading the infectious foci, and (6) The danger of producing a cerebral prolapse.

Doerner instituted a series of experimental brain punctures in dogs, employing various instruments and different solutions. He found that the smallest defect in cerebral tissue occurred with the use of a fine needle, a larger one being produced by a sharp pointed scalpel. With a blunt broad needle no hemorrhage was produced, but along the path of the puncture there was here and there a degeneration of nuclei of the cells. The puncture with knife and forceps produced great hemorrhage and much nuclear degeneration. SONNENSCHEIN (STEIN).

2707

Control of Bleeding in Brain Operations. J. A. EASTMAN, *Jour. of Ophth. and Oto-Laryngol.*

Abstracted in THE LARYNGOSCOPE, p. 1164, Oct., 1912.

2708

Treatment of Acute Mastoiditis and Severe Otitis by Bier's Hyperemia. ESCHWEILER, *Ztschr. f. Ohrenh. u. f. Krank. d. Luftw.*, p. 146, Bd. 65, Heft 2, 1912.

Abstracted in THE LARYNGOSCOPE, p. 60, Jan., 1913.

2713

Surgical Treatment of Meningitis; Its Scope and Accomplishment. J. S. HAYNES.

Original contribution to THE LARYNGOSCOPE, p. 865, June, 1912.

2715

Present Status of Treatment of Suppurative Meningitis. F. HENKE, *Med. Klinik*, Feb. 25, 1912.

Henke reports a typical case of suppurative meningitis with favorable outcome. The patient when first seen presented nystagmus and vertigo complicating a cholesteatomatous otitis which pointed to labyrinthine involvement. Hexamethylenamin was given as a prophylactic measure before the radical operation. Following the operation the inflammation spread to the entire labyrinth, deafness developed, and on the fourth day intense headache, pain in sacral region, fever, rigidity of neck, and Koernig's sign. Four lumbar punctures; fluid (115 ccm.) contained pus and diplococci. The hexamethylenamin was kept up. After expulsion of the cochlea, the patient entirely recovered. Henke feels that treatment is only effective if undertaken early and kept up systematically. ED.

2725

Pro and Con of Maintenance of Retro-auricular Opening After the Radical Mastoid Operation. S. OPPENHEIMER, *Med. Rec.*, Nov. 30, 1912.

Oppenheimer concludes that because of the disfigurement of a large opening behind the auricle it should be closed as soon as is consistent with the cessation of pathological changes within the osseous cavity. Heaping up of epithelial masses must be guarded against. One must be certain that slight exfoliations that may appear can be as readily removed through the enlarged meatus as from the post-auricular opening. ED.

2726

After-treatment of the Radical Mastoid Operation with Special Reference to the Subject of Packing. W. C. PHILLIPS.

Original contribution to THE LARYNGOSCOPE, p. 234, March, 1912.

2730

Serum and Vaccine Therapy in the Treatment of Intra-cranial Complications of Middle-ear Suppuration. A. L. TURNER, *Jour. of Laryngol.*, p. 297, June, 1912.

Of the five cases treated with anti-streptococcic serum subsequent to operation three recovered and two died. Four were cases of chronic middle-ear suppuration, one associated with labyrinth disease; the fifth was a case of acute otitis media with labyrinth symptoms. The intra-cranial complications were acute lepto-meningitis (3 cases), sigmoid sinus thrombosis (1 case), and serous meningitis (1 case). Two of the cases of lepto-meningitis and the case of serous meningitis recovered.

Autogenous vaccines were used in four cases of sigmoid sinus thrombosis, two of which were associated with meningitis. Three recovered, one died. ED.

2737

New Mastoid Chisels. F. ALLPORT, *Jour. A. M. A.*, p. 2066, Dec. 7, 1912.

This set consists of six different sizes of chisels concave-convex, bevel-sharpened on the front, very gently rounded on the back and slightly rounded on the edge with corners turned forward. ED.

2738

New Instrument for Removing Foreign Body from the Ear. O. BECK, *Monatschr. f. Ohrenh.*, p. 229, Bd. 46, Heft 2, 1912.

The instrument is attached to a curved handle and has three prongs which engage the foreign body in such a way that no injury can be done to the ear. ED.

2740

Tinnitus and Deafness; A New Instrument for Their Relief. T. R. CHAMBERS.

Original contribution to THE LARYNGOSCOPE, p. 1137, Sept., 1912.

2741

Improvised Noise-producer for Determining Unilateral Deafness. E. P. FOWLER, *Jour. A. M. A.*, p. 410, Feb. 10, 1912.

Fowler uses a piece of ordinary rubber tubing or an otologic auscultation tube, or a stethoscope, one ear-piece being stopped up if it is a double instrument. One end of the device should be inserted into the patient's ear, using care to prevent any occlusion of the lumen of the tube or ear. The other end should be held a few inches below and in front of the operator's mouth, and a fine column of air may be blown through the lips into and across the extremity of the apparatus thus adjusted. If a stethoscope is used, blow into its bell. The blowing will produce a loud confused, roaring sensation in the hearing ear and will prevent this ear from detecting any other sounds. If, while this is operating, a third person talks or shouts into the ear under examination, the patient will hear the shouting only if the deaf ear possesses some power of sound perception. This simple device will cut off all perception of sound by air or by bone conduction. This may be proved by using a double stethoscope in normal ears and blowing into the bell."

The patient must be cautioned against mistaking vibrations from the lower tuning-forks for sound sensation. ED.

2743

New Mastoid Retractor. P. HAMMOND, *Med. and Surg. Jour.*, p. 967, June 27, 1912.

Dr. Phillip Hammond presents a new retractor which has proved useful in holding back the tissues during a radical mastoid operation. It also affords a means of keeping at a constant tension, the tape he uses to keep the soft parts of the canal out of the operative field. An accompanying cut shows its mechanism. BERRY (MOSHER).

2748

Eustachian Bougies of Fuse Wire. J. S. WEAVER, *Jour. of Ophth. and Oto-Laryngol.*, p. 269, Aug., 1912.

Abstracted in THE LARYNGOSCOPE, p. 1202, Oct., 1912.

2749

The Salpingian Curette. S. YANKAUER.

Original contribution to THE LARYNGOSCOPE, p. 762, May., 1912.

2751

New Instruments. L. M. FREEDMAN, *Boston Med. and Surg. Jour.*, p. 928, June 13, 1912.

Freedman presents two new instruments, one a combined tonsil scalpel and dissector, and the other a splint for holding the flaps together following a submucous resection of the septum. This instrument consists of two pieces of ivory, parallel to each other, to go in each naris, with a connecting spring to exert the necessary slight pressure on each side of the septum. BERRY (MOSHER).

2753

Paraffino-style and Paraffino-style Trocar for Ozena and for the Correction of Nasal Deformities. ROBERT LEROUX, *Rev. hebd. de Laryngol.*, Oct. 26, 1912.

The paraffin is introduced in tubes and is forced through the lateral fenestrae. The trocar for ozena is small but there are two larger sizes for the correction of nasal deformities. SCHEPPEGRELL.

2757

Small Instrument to Correct Faulty Nasal Breathing. PIELK, *Deut. med. Wchnschr.*, No. 4, 1912.

This bendable round tube is inserted into the nose through the inferior meatus and pushed to the choana. The wing-shape attachments at its end rest against the septum and spread the ala nasi. ED.

2764

Tonsillectomy with a Single Instrument, the Tonsillectome. J. C. BECK, *Jour. A. M. A.*, p. 240, Jan. 27, 1912.

This tonsillectome is a Pierce-Miller snare modified by having a small, heavy fenestrum at the end through which the tonsil is pushed and everted. The wire loop is hidden in the slit of the fenestrum and is contained as a twisted stylet through the cannula. The technic followed, similar to that of Dr. Sluder, is described in detail. Hemorrhage is usually not present. Total anesthesia has been found necessary since more complete relaxation is required.

In the same article Beck describes two other instruments which he employs, a mouth-gag so constructed that it will be out of way of operator, and a tonsil clamping hemostat. ED.

2772

"Split" Mask for the Administration of Anesthetics During Operations Within the Mouth. S. IGLAUER.

Original contribution to THE LARYNGOSCOPE, p. 1232, Oct., 1912.

2774

Improved Tonsil Tenacula Constructed on the Principle of a Double Tined Cork-screw. J. D. LEWIS.

Original contribution to THE LARYNGOSCOPE, p. 1311, Nov., 1912.

2784

Cleft Palate Needle Holder. G. M. TODD, *Jour. A. M. A.*. p. 2127, Dec. 14, 1912.

The hand portion of this needle-holder is constructed at an obtuse angle so that none of the field of operation is obstructed, the palate is plainly in sight at all times and the sutures readily placed. One blade has a notch into which the other blade passes when the holder is closed; this insures firmness. The needle-bite is small; there is a catch on the finger-holds to fasten the needle securely in its bits. ED.

2796

An Apparatus for Intra-tracheal Insufflation. HENRY H. JANEWAY, *Ann. of Surg.*, Aug., 1912.

The apparatus is the result of previous work of Drs. Nathan Green and Janeway in experimental intra-thoracic surgery, and furnishes to the patient a continuous current of warmed, moistened and filtered air, mixed with any desired amount of ether vapor, and interrupted at regular intervals, in order to allow at such intervals of partial collapse of the lungs. The apparatus, a portable one, measures 18x8 inches and can be run by either the alternating or the direct current. Its construction can only be studied from the photos or from the apparatus itself.

EDGAR (GOLDSTEIN).

2798

Improved Esophagoscope. W. LERCHE, *Jour. A. M. A.*, p. 619, March 2, 1912.

The light is at the distal end. There are two grooves, one to hold the lamp and the other the suction pump. The tube is mobile. In adults esophagoscopy is performed under local anesthesia in the sitting position; in children under general anesthesia in recumbent position or lying on the right side. ED.

2806

Examination of the Larynx and Fauces of Infants. SCHMUCKERT, *Muench. med. Wchnschr.*, Feb. 6, 1912.

This child's pharyngoscope is made after the model of the regular pharyngoscope but reduced to meet the proportions of the infant's pharynx. Examination is thus greatly facilitated. ED.

2807

New Safety-device for Bronchoscopy. S. YANKAUER, *Arch. f. Laryngol.*, p. 710, Bd. 26, Heft 3, 1912.

The purpose of Yankauer's addition to the Bruenings instrument is to protect the operator from having the patient breathe or cough in his face during direct laryngoscopy or bronchoscopy. ED.

2810

New Instruments. A. BRAUN.

Original contribution to THE LARYNGOSCOPE, p. 128, Feb., 1912.

2822

Instantaneous Sterilization of Small Instruments. TRETROP. *Presse Med.*, Sept. 4, 1912.

Tretrop found that upon bacteriological research a boiling mixture of opodeldoc with an equal quantity of water, sterilized almost instantly the small instruments used by laryngologists and specialists along similar lines, without attacking the edge. Staphylococci, streptococci, pneumococci, and *bacilli pyocyaneus et coli* are unable to resist the solution. Opodeldoc, we need scarcely say, is the linimentum saponatocamphoratum of the National Formulary.—*Ex.*

2830

Trifacial Reflexes with Special Reference to Disease of the Eye, Ear, Nose and Throat. ALBERT H. ANDREWS, *Jour. Ophth. and Oto-Laryngol.*, p. 294, Sept., 1912.

The list of pathological and other reflex manifestations supposedly emanating from irritation of the trifacial nerve is legion. The anatomy and physiology is touched upon as introductory to the clinical side. Here a series of thirteen cases are reported reciting various symptoms which in conjunction with certain findings and treatment constitute, in the author's opinion, evidence of reflex disturbances. STEIN.

2832

Fatalities Following Anaphylaxis. W. ASAM, *Muench. med. Wchnschr.*, No. 15, 1912.

Case 1: The wife of the author received two doses of antitoxin at an interval of a year for diphtheria without any unfavorable reaction following the second injection. Almost eleven years later she again contracted diphtheria and was given the serum with very alarming anaphylactic reaction.

Case 2: The son of the author had diphtheria three times. Twice he was given antitoxin without anaphylactic symptoms. Because of the serious result in case 1, the author injected the serum during the third attack, per os. ED.

2841

Presentation of Cases of Plastic Surgery. J. C. BECK.

Original contribution to THE LARYNGOSCOPE, p. 97, July, 1912.

2857

Case of Spontaneous Cure of Malignant Tumor of the Larynx. J. Broeckaert, *Presse Oto-Laryngol. Belge*, p. 8, Jan., 1912, and *Ztschr. f. Laryngol.*, p. 51, Bd. 5, Heft 1, 1912.

This case was reported a year ago. Now there has been a recurrence of the tumor (cylindroma) on the base of the tongue and left vocal cord which will necessitate radical operation. Ed.

2862

Malignant Diseases of the Upper Air Passage, With Notes Upon Two Cases of Epithelioma. J. Price-Brown, *Can. Prac. and Review*, Dec., 1912.

The author urges that the views of Voltolini with regard to the treatment of fibroma are from his personal experience equally applicable to sarcoma and to a limited extent to epithelioma also, and that of all methods electrical treatment is the best. The fibroma and sarcoma of the nasopharynx grow alike, have a like origin in the soft tissues of the vault, and the injury to the bony structures is more frequently that of pressure absorption than of malignancy within the bone itself, the antrum, of course, excepted. The author states that he has advocated these views for twenty years, and proceeds to detail the history of ten cases, with six or possibly seven cures, the oldest of 19 years, and of ten years' standing.

Wishart.

2865

Ear, Nose and Throat in Affections of Metabolism. G. Bruehl, *Deut. med. Wchnschr.*, April 11-18, 1912.

Bruehl discusses the relation of the ear, nose and throat to gout, obesity, myxedema and diabetes. Cretins with goiter are sometimes deaf-mutes. In cases of goiter with nerve deafness the hearing greatly improves under treatment for the thyroid condition, the benefit is due, very likely, to the subsidence of the myxedematous tissue in the air passages and of toxic influences injuring the auditory nerve. In two cases recorded the first sign of a diabetes was a furuncle in the ear. In three of Bruehl's cases of severe diabetes the otitis led to rapid involvement of the mastoid process. In the presence of a diabetic condition operation should only be undertaken when the indication is vital. Bruehl urges a systematic general examination in all cases of nerve-deafness.

2884

Contribution to the Pathology and Clinical Diagnosis of Status Lymphaticus. G. H. Cocks.

Original contribution to The Laryngoscope, p. 997, Aug., 1912.

2886

Relation of Diabetic Errors to Disturbances of the Upper Respiratory Tract. E. W. Collins.

Original contribution to The Laryngoscope, p. 1382, Dec., 1912.

2891

Tic Douloreux of the Face and the Treatment with Neurolytic Injections.

J. Crespin, *Jour. Med. Franc.*, p. 49, March, 1912.

The neurolytic solution (glycerin, carbolic acid, alcohol, etc.) was injected according to Sicard's technic. Just after operation, analgesia; edema the next day which lasted for two days. Relief for eight months when another injection of 1½ ccm. of a solution of alcohol, menthol and novocain was administered. Ed.

2892

Status Lymphaticus.

F. S. Crossfield, *Boston Med. and Surg. Jour.*, Jan. 18. 1912.

Child of 2½ years entered hospital for removal of adenoids and tonsils. Only a small quantity of ether was used by the drop method; hemorrhage slight. The child was apparently in good condition when it left the operating table. Three minutes later respiration suddenly ceased and all attempts at resuscitation proved fruitless. Autopsy revealed hyperplasia of the lymphatic system. Ed.

2900

Hastening of Wound-healing by Means of Skin Grafting and the Use of Certain Organic Coloring Matters.

J. S. Davis, *Boston Med. and Surg. Jour.*. June 6-13, 1912.

Davis, of Johns Hopkins, treats "skin-grafting" from a general surgical standpoint, but the specialist finds many interesting and helpful points in the discussion. A few of his axioms may be here enumerated. The surface upon which to graft should if possible have a good blood supply. Grafts may be successfully placed upon periosteum, cortical bone, and even dura mater, but it is better to first let some healthy flat granulation-tissue spring up. If the blood-supply is good, grafts may be placed upon fresh wounds, on granulations freshened by curetting or rubbing, on undisturbed healthy granulations. The author prefers the last as giving the best results. This is accounted for by the fact that a curettement must be followed by a re-establishment of a capillary circulation in the granulations before healing can begin. If the granulations are left undisturbed, capillary vascular loops are already present to enter the graft. A further advantage of this method is the absence of pain and the dryness of the field.

His list of drugs for stimulating granulations is comprehensive: Tincture of idoin; nitrate of silver; balsam of Peru pure, or with three parts castor oil; liq. sodae chlorinatae and water, 1.8; chloral hydrate solution, 2 gr. to the ounce of water; saturated aqueous solution of picric acid; modified styrax ointment; poly-antiseptic ointment of Reclus; pure carbolic; glycerin dressings; also strapping with zinc oxid plaster.

The skin for furnishing the graft may be prepared by scrubbing with soap and water, then sterile water, ether and alcohol, and finally normal salt solution. Or the iodin technic has proved applicable in all types of grafting cases, and offers the advantage of obtaining a perfectly dry graft.

As to the different methods of obtaining grafts, the writer uses the Thiersch method most frequently. The Reverdin "pin method" is good for the planting on small areas; 5 mm. between the islands gives the best results. General anesthesia is not necessary for this. If many "pin grafts" are needed, a local injection of 1 per cent quinine and urea solution, or ½ per cent novocain will prevent pain and not injure the grafts. For the face, hands, or exposed joint surfaces, a graft including the whole skin, down to the fat, has proved better. This may be obtained by a flap from neighboring or distant tissues, or may be removed en masse. It does better if small button-holes are made in it at intervals for the escape of accumulated secretion, and numerous superficially placed fine silk sutures further help a good approximation. At first these grafts project above the skin; but they soon assume the level of the surrounding tissues.

In the author's hands the taking of skin from animals has given disappointing results. He says that the most uniformly successful reports seem to follow the use of skin from a young pig.

His remarks concerning the vitality of grafts are particularly pertinent to the operator who may not wish to apply the skin-graft immediately, at the time of a radical mastoid operation. He says: "It is not necessary to apply grafts immediately after cutting, and grafts which are kept moist and cold can be transplanted after a number of days or weeks with as good results as when just cut. This is very important, as grafts can be cut at the time of operation when the patient is under a general anesthetic, and applied later, if conditions for immediate grafting are not satisfactory."

Grafts of all kinds may be placed on fresh wounds or on healthy granulating surfaces. The part must be kept immobilized. The larger the graft the better, as there is less resulting scarring, but all grafts over 3 cm. in diameter should be button-holed to permit the escape of secretions. Mild infections of the wound do not seem to delay the healing. A molded wire frame to relieve pressure on the wound and permit the access of air, helps conditions. Careful massage of the skin about the grafted area after the grafts are firmly healed, will help the ultimate result. Within a few weeks sensation will have begun to enter the transplanted skin from the margins.

The author then turns to a discussion of the use of chemical dye-stuffs to encourage epidermatization, particularly that of scarlet-red and amido-azotoluol. After taking up the chemistry and the history of the use of these and allied forms, he goes into a discussion of their application. The reaction is best when the wound shows a clean granulating surface, but the writer finds the scarlet red and amido-azotlouol useful in unclean suppurating wounds too. As it is not antiseptic, it is best put up in balsam of Peru ointment, blue ointment, iodoform ointment, etc. The ordinary use is with a lanolin or vaseline base, in an 8 per cent strength, alternating every twenty-four to forty-eight hours with some bland ointment. It may be used on partial skin grafts after forty-eight hours. The surrounding skin may well be covered with some bland ointment. These dye-stuffs have many earnest adherents and their use has been successful in many conditions in addition to skin defects, such as ulcers of the mucous membranes of the mouth, nose, vagina and cervix, and even in corneal defects and perforated tympanic membranes. In the eye, white vaselin makes the best base. Scarlet red and amido-azotluol gauze is made by immersing the gauze in an 8 per cent alcoholic solution and then letting it dry out. A useful mixture and one that can be applied with a brush is castor oil containing 10 per cent alcohol which will take up 4 per cent of scarlet red and 8 per cent of amido-azotlouol. Both powders may be mixed with boric, bismuth or any other dusting powder and used for insufflation in the nose and for the healing of small wounds, the healing proceeding rapidly under the scab thus formed. Both ointments may be sterilized without impairing the stimulating power of the preparations.

In the author's experience the amido-azotoluol has been very slightly more active than the scarlet red. This he was able to demonstrate on an individual having two similar wounds at the same time. It is safe for use in either old or young, and seems to act equally well on patients of whatever extreme of age. Only one case is reported where there was any general toxic effect from the use of this drug. Locally, the scarlet red seems to be slightly irritating while the writer has observed no such sign in the other. Excessive secretions are likely to follow the early use of the drug, but the wound soon dries out. Excessive skin formation may follow these applications but this soon goes down, and in no case has there ever been found any tendency to malignancy. In the minds of some enthusiasts, the use of these dye-stuffs should supplant that of skin-grafting. The author does not take quite so radical a position but feels that they should play a very important part in the treatment of these sluggish wounds, where the stimulation gained by the application of this drug has so frequently in the experience of many, led to a rapid healing and to such a considerable shortening of the time the patient is obliged to remain in the hospital. BERRY (MOSHER).

2909

Etiology and Pathology of Whooping-cough.

E. DOEBELI, *Corresp.-Bl. f. Schweizer Aerzte*, p. 113, Feb. 1, 1912.

Doebeli puts forward in this article some wild and illogical theories about whooping cough. In one place he states that a child may develop whooping cough without having been in contact with a child thus infected and later he remarks that paroxysms are psychical—that in order to develop whooping cough a child must have heard or seen paroxysms in another. The paroxysms appear when the child is nervous; their severity is proportional to the degree of excitability. The infection is due to the catarrh which invariably accompanies pertussis. ED.

2915

Use of Hexamethylenamin in Affections of the Upper Respiratory Tract.

A. A. EISENBERG, *Jour. A. M. A.*, p. 2032, June 29, 1912.

Eisenberg has used hexamethylenamin in 12 cases of acute rhinitis, 22 of acute bronchitis, 8 of influenza and 1 of chronic frontal sinusitis. In 8 of the rhinitis cases seen before the discharge was established, 6 developed a slight discharge the next day, and in all the discharge entirely disappeared in three or four days. In the other disturbance, too, complete recovery occurred in five or seven days. Eisenberg concludes:

1. "Hexamethylenamin is a valuable remedy in the treatment of the inflammatory conditions of the upper respiratory tract. 2. It must be given in doses large enough to secure its full physiologic effects. 3. No untoward symptoms were observed while given in fairly large doses, up to 30 grains daily. 4. It seems to prevent possible complications of acute rhinitis, such as bronchitis and sinusitis." ED.

2928

Local Anesthetics in the Upper Respiratory Tract Including the Adrenalin Preparations. J. W. FREUDENTHAL, *Med. Rec.*, p. 105, July 20, 1912.

Abstracted in THE LARYNGOSCOPE, p. 133, Feb., 1913.

2941

Spirochetes in Upper Air Passages and Gastro-intestinal Tract. GERBER, *Virchows Arch.* Jan., 1912.

According to Gerber there are a series of ulcero-membranous affections of the bucco-pharyngeal cavity due to the presence of the spirochete and fusiform bacillus. These affections react to salvarsan. This data is important because of the diagnostic errors which arise in confusing with the spirochete pallida. ED.

2945

The After-treatment of Nose, Throat and Ear Operations. PERRY G. GOLDSMITH, *Can. Jour. of Med. and Surg.*, March, 1912.

The paper deals with post-operative measures which the writer has found from his own practice "conduced to a more satisfactory result from a surgical standpoint, and a more comfortable convalescence on the patient's part."

In vestibule operations the field of operation may be cleaned so thoroughly as to allow of a dressing of acentanilide and flexible collodion; nasal packing is abandoned in favor of Bernay's splints wrapped in oil silk of cargile membrane, and the splint is swollen out immediately by dropping a solution of bicloride into the nose. The removal of the splint is followed by an injection of bismuth paste, without previous cleansing of the passages. A perforation of the uncut flap is reinforced by a bit of the cartilage removed.

After using the galvano-cautery a mixture of carbolic acid and tincture iodid is applied to the seared line.

In operations upon the middle turbinal and ethmoid no packing is used but the space filled instead with bismuth paste, supported on a small piece of cotton wool and all interferences with the parts avoided for at least ten days.

In tonsil enucleations gentle massage of the cavity with argyrol conduces to healing and less cicatrization.

The writer is more inclined of late to favor little or no packing in his radical mastoid cases, and if any be required prefers Mosher's inflated rubber bag packing. WISHART.

2949

Teaching of Otology and Laryngology in Denmark. T. Hald, *Jour. of Laryngol. Rhinol. and Otol.*, p. 74, Feb., 1912.

Hald says that though oto-laryngology is still struggling for full recognition from the universities, much progress has been made. The instructor in oto-laryngology has not yet, however, been appointed to a full professionship, but has been nominated "titular" professor. A table of the oto-laryngological clinics in Denmark is appended. Ed.

2950

Status Lymphaticus. A. R. Hall, *St. Paul Med. Jour.*, April, 1912.

Hall warns the surgeon against patients with hypertrophy of the thymus and of other lymphatic tissues. These patients have little resistance to disease, cannot often withstand operation, and usually die suddenly. Hall points out some of the accompanying symptoms of status lymphaticus as aids in its diagnosis. Ed.

2965

Treatment of Simple Catarrh of the Respiratory Passages with Bacterial Vaccines. A. P. Hitchins, *Med. Rec.*, p. 317, Feb. 17, 1912.

Abstracted in The Laryngoscope, p. 764, May, 1912.

2972

Case of Scleroma. S. Iglauer.

Original contribution to The Laryngoscope, p. 1012, Aug., 1912.

2982

Enlargement of the Thymus; A Remarkable Case. A. M. Kennedy, *Glasgow Med. Jour*, p. 31, Jan., 1912.

Abstracted in The Laryngoscope, p. 1123, Sept., 1912.

2987

Primary Sources of Tuberculous Infection; Their Relation to Eugenics, and the Cost of Tuberculosis. S. A. Knopf, *N. Y. Med. Jour.*, p. 1349, June 29, 1912.

From statistics gathered Knopf estimates that New York City spends about $2,000,000 annually for the care of the tuberculous. Much of this is in vain, since when the patients return to their former environment relapses occur. There are from 45,000 to 60,000 tuberculous patients in New York City; the death-rate per annum is 10,258. These figures are proportionately true throughout the United States.

The author gives the results of an examination of the blood of six tubercular women and shows why their children lack physical vigor. Unless such enfeebled children are placed in favorable environments they are also doomed. It is most frequently the younger children of large families, who are tubercular. This is explained by the age of the father, the weakened condition of the mother and also perhaps by the fact that as the size of the family increases their poverty increases also. Chronic alcoholism is one of the most important factors in an acquired predisposition to tuberculosis. French statistics show that 25 per cent of non-tuberculous parents of tuberculous children admitted to the sana-

toria were alcoholics. Knopf renumerates the various well-known sources of infection in adult life, poverty, unhealthy environment, kissing, use of infected cups, etc. The tuberculous should be prevented from marrying; once married they should not have children as long as they are afflicted.
Ed.

2994

Vaccines in Treatment of Pertussis. M. Ladd, *Arch. of Ped.*, Aug., 1912.

Pertussis vaccine was used in nine cases in about the third week of the disease; they recovered in about the fifth week of treatment. No other therapy was employed. After three injections the severity and number of the paroxysms decreased considerably. The proper quantity for individual cases is fully discussed.
Ed.

2996

Vaccines and the Common Cold. Laidlaw, *Public Health Jour.*, April, 1912.

After reciting the evidence pointing to the common cold being of bacterial origin the writer states that he "is convinced that vaccines have a worthy place in this connection, not merely as therapeutic and immunizing agents, but also as a means of further introduction to the possibilities in store for a broader and closer laboratory study of public health matters.

In a series of cases of common cold, he found that during the incipient stage, cultures from the secretions showed generally a variety of organisms, none of which seem to be present in abundance or to grow luxuriantly, but that in some instances only one or two kinds of organisms grew in culture; that with the continuance of the process there become evident a tendency towards diminution in the number of kinds; while with the return to normal, the bacteria which has been abundantly present showed both a tendency to disappear from the secretions, and a disinclination to proliferate rapidly on culture media; that vaccines prepared from growths of the organisms which seemed prone to so flourish produced beneficent reactions in the patients inoculated with them, particularly in the early and late stage of their trouble."
Wishart

3008

Local Anesthesia by Infiltration in Oto-rhino-laryngology. H. Luc. Original contribution to The Laryngoscope, p. 707, May, 1912.

3010

Unusual Luetic and Dermatologic Cases in Oto-laryngologic Practice. S. H. Lutz, *Am. Jour. of Dermatol.*, Vol. 16, No. 5, 1912.

Lutz reports in detail a case of syphilis in a girl of 17 years due to an infected piece of a broken glass syringe which had lodged and remained in her tonsil for over a year. He also mentions several cases of extragenital chancres, infection of lobule of ear from vaccination wound, eczema of the canal and auricle, erysipelas, and epithelioma of the auricle.
Ed.

3017

Causes and Treatment of Reflex Cough. S. MARX, *Ztschr. f. Ohrenh.*, p. 330, Bd. 65, Heft 4, 1912.

Abstracted in THE LARYNGOSCOPE, p. 189, March, 1913.

3022

Surgery of the Thymus. C. H. MAYS, *Ann. of Surg.*, July, 1912.

Mayo states that thymectomy is not a difficult procedure and can be performed through a curved transverse incision low in the neck. The author reports a case in which operation resulted in immediate relief and absolute cure. Mayo says that many of the deaths ascribed to "status lymphaticus" may in reality be traced to the anesthetic. ED.

3032

Scleroma of the Upper Air Passages. F. R. NAGER, *Corresp.-Bl. f. Schweizer Aerzte*, May 1, 1912.

Nager discusses the geographical distribution, the clinical symptom, the histology and bacteriology of scleroma and reports a case in which the nose, naso-pharynx, soft palate, larynx and sub-glottic regions were involved. The author intends using the Roentgen rays in his case. ED.

3039

Hypertrophy of the Thymus. E. OLIVIER, *Arch. gen. de Chir.*, Feb., 1912.

Olivier feels that operative intervention is the only reliable preventive and curative measure in cases of hypertrophied thymus, and is much to be preferred to Roentgen-therapy, resection of the manubrium or fixation of the thymus. ED.

3045

Ultimate Outcome of Treatment of Trigeminal Neuralgia. K. OTTO, *Mitteil a. d. Grenzgeb. d. Med. u. Chir.*, p. 78, Vol. 25, No. 1, 1912.

Otto states that recurrence usually takes place in a few months after peripheral operations on the trigeminal nerve. After resections at the base of the skull recurrence is less frequent. Gasserectomy gives the best results but should only be performed when all three branches are involved. Alcohol (70-80 per cent) is the most effective means of blocking the nerves without injuring adjacent tissues. ED.

3051

Technic and Results of Deep Injections of Alcohol for Trifacial Neuralgia. H. T. PATRICK, *Jour. A. M. A.*, p. 155 Jan. 20, 1912.

Patrick details his technic of injecting alcohol. He chooses the supraorbital nerve; sometimes the supra-trochlear branch of the frontal nerve must be separately injected. This procedure is indicated in the very old, and very feeble, but in the young and vigorous the radical operation is preferable. Deep injections of alcohol are contra-indicated in cases of migraine, sinus disease, alveolar abscess, brain tumor or abscess, syphilitic periostitis, brain syphilis, glaucoma, pressure of septic spur or softening of optic thalmus—all conditions at times referred to Patrick for injection. ED.

3074

Some Experiences with Radium. G. S. RYERSON, *Can. Med. Assn. Jour.*, Aug., 1912.

Abstracted in THE LARYNGOSCOPE, p. 158, Feb., 1913.

3075

Blood Tumors of the Upper Air Passages. J. SAFRANEK, *Orvosi Hetilap*, No. 11, 1912.

Three cases are reported with detailed discussion of the clinical data and therapy. ED.

3084

Simple Method of Applying Bismuth into Open Bone Cavities Before Taking Radiograms. K. SCHMUCKERT, *Ztschr. f. Laryngol. Rhinol. u. ihre Grenzgeb.*, p. 263, Bd. 5, Heft 2, 1912.

Abstracted in THE LARYNGOSCOPE, p. 1207, Oct., 1912.

3096

Deep Injections of Alcohol for Trifacial Neuralgia—102 Cases. D. A. SHIRRES, *Can. Med. Assn. Jour.*, p. 772, Sept., 1912.

The duration of the improvement has been three or four years, and no injury ever followed the injections. Six to ten injections are required. Reflex neuralgia is guarded against by injecting not only that division of the fifth nerve in which pain is felt but also the other two divisions. The cases are always carefully selected and those rejected in which the neuralgia is due to organic nervous disease, sinus disorder, migraine, tumor, etc. ED.

3103

Application of Antistreptococcal Serum Per Os and Locally in Powdered Form. SPIESS, *Deut. med. Wchnschr.*, No. 5, p. 207, 1912.

Spiess advocates the use of antistreptococcal serum in every case in which the presence of streptococci is suspected singly or as a complication; the earlier it is administered the better the results. Good results were also obtained with this serum in cases of angina lacunaris, anginas following nasal operations, in anginas with articular rheumatic complications, erysipelas and acute rhinitis. ED.

3117

Hypertrophied Thymus and Status Lymphaticus. J. H. TAYLOR, *N. Y. Med. Jour.*, July 20, 1912.

Two cases are reported. The first was a child of six months to whom a hypodermic was given followed by convulsions, loss of consciousness and death. Autopsy findings showed an unusually enlarged thymus as well as enlarged glands in the cervical submaxillary and bronchial regions, adult-size spleen and engorged stomach and intestines. The second case was one of enlarged thymus without status lymphaticus complicating a case of cretinism in an infant. Thyroid therapy resulted in cure. ED.

3130

Education of Medical Student and Specialist in Diseases of Throat, Nose and Ear in Germany. VON EICKEN, *Jour. of Laryngol.*, p. 145, March, 1912.

Von Eicken points out that oto-laryngology has not attained the independent position in European country which even ophthalmology and psychiatry enjoy. ED.

3141

Syphilis of the Upper Respiratory Tract Treated with Salvarsan. F. W. WHITE.

Original contribution to THE LARYNGOSCOPE, p. 1096, Sept., 1912.

3149

Primary Malignant Growth of the Lungs and Bronchi; A Pathological and Clinical Study. I. ADLER. Longmanns, Green and Co., N. Y., 1912.

Reviewed in THE LARYNGOSCOPE, p. 80, Jan., 1913.

3150

Otology in Childhood. GUSTAV ALEXANDER.

Reviewed in THE LARYNGOSCOPE, p. 237, March, 1913.

3151

The Thrombosis Question. L. ASCHOFF, O. DE LA CAMP, B. VON BECK, AND B. KROENIG. F. C. W. Vogel, Leipzig, 1912.

Reviewed in THE LARYNGOSCOPE, p. 159, Feb., 1913.

3152

Hare-lip and Cleft Palate. J. BERRY AND T. P. LEGG. P. Blakiston's Sons and Co., 1912.

Reviewed in THE LARYNGOSCOPE, p. 79, Jan., 1913.

3155

Surgery and Diseases of the Mouth and Jaws. A Practical Treatise on the Surgery and Diseases of the Mouth and Allied Structures. By VILRAY PAPIN BLAIR, A. M., M. D., Professor of Oral Surgery in the Washington University Dental School. Cloth. Pp. 638, with 384 illustrations, St. Louis; C. V. Mosby Company, 1912. Price, $5.

For some time there has been a growing tendency for the ear and throat surgeon to take up fields of work formerly regarded as strictly in the domain of the general surgeon. Surgical activity and ambition to fully develop oto-laryngology to a classic and important surgical sphere has emboldened many of our more progressive and advanced workers to do their own thyroidectomies, laryngectomies, and the more extensive operations on the mouth and face.

The author discusses infections, tumors and neoplasms peculiar to the face and jaws. There are interesting chapters on the preparation and administration of autogenous vaccines, the control and prevention of hemorrhage, and many other points in surgical technic gleaned in the practical experience of head surgery.

A matter of interest to the oto-laryngologic surgeon are the ten chapters which treat of congenital facial clefts, their modifications and variations, anatomical considerations, description of the various operations for their correction, the excellent details of operative technic as developed by the author, subsequent plastics, the use of obturators and artificial vela, post-pharyngeal injection of paraffin, correction of occlusion and mal-occlusion of the teeth, and the speech-training following this prosthetic surgery.

There are other chapters on diseases of the maxillary sinus, tumors of the lips, neoplasms of the floor of the mouth, affections of the salivary glands, diseases of the tongue, injuries of the pharynx, and a concluding chapter on local and general anesthesia which merit careful consideration.

The illustrations are original, and so, too, are some of the suggestions of the author for the correction of deformities of the jaw. It is an acceptable contribution to this field of surgery. GOLDSTEIN.

3156

Deafness; Its Relief by Lip-reading. By E. BOUDIN, Professor at the National Institution for Deaf-mutes in Paris. Pp. 144, with 27 illustrations in the text. A. Maloine, Paris, 1912.

The influence of lip-reading as an advanced system of instruction for the deaf is radiating from every important medical center, and this small practical volume by Prof. Boudin of the National Institute for the Deaf in Paris, is but another evidence of the active interest in this work.

The author introduces a new system of elucidating the methods of imparting instruction in lip-reading to the deaf, in that he presents an excellent series of photographic reproductions of vowels and consonants in a chapter on elementary phonetics.

He demonstrates to the pupil by mirror-reflection the movements of the mouth and accessory organs in the production of elementary sounds; he illustrates to him by the sense of touch, the vibrations produced in the resonance and formation of these tones; he demonstrates facial expression associated with the production of tones and words; he shows the variation in lip-reading in profile; he instructs the pupil in the use of the mirror for individual practice; all of these principles are excellently presented in photographs, wtih descriptive text, in the first section of this manual.

Part 2 contains directions for systematic practical exercises graded and grouped to meet the progress of the pupil.

This is an excellent little working manual and contains much valuable data for teachers of the deaf and for all interested otologists. GOLDSTEIN.

3158

Surgery of Oral Disease and Malformations; Their Diagnosis and Treatment. G. V. I. BROWN, Lea and Febiger, Philadelphia, 1912.

Reviewed in THE LARYNGOSCOPE, p. 995, July, 1912.

3160

Physiology of the Semi-circular Canals and Their Relation to Sea Sickness. H. K. LEWIS, London, 1912.

Reviewed in THE LARYNGOSCOPE, p. 79, Jan., 1913.

3162

Heredity and Eugenics. A Course of Lectures Summarizing Recent Advances in Knowledge in Variation, Heredity and Evolution and Its Relation to Plant, Animal and Human Improvement and Welfare. W. E. CASTLE, J. M. COULTER, C. B. DAVENPORT, E. M. EAST AND W. L. TOWER.

Reviewed in THE LARYNGOSCOPE, p. 239, March, 1913.

3163

History of Anatomy and Physiology of the Nasal Fossae from the Time of Hippocrates to the Specialistic Period. C. CHAUVEAU.

Reviewed in THE LARYNGOSCOPE, p. 237, March, 1913.

3164

The New Vienna Clinic for Laryngeal and Nasal Affections. O. CHIARI AND O. KOHLER.

Reviewed in THE LARYNGOSCOPE, p. 159, Feb., 1913.

3165

Electricity in Diseases of the Eye, Ear, Nose and Throat. W. FRANKLIN COLEMAN, M. D., M. R. C. S., Eng., Professor of Ophthalmology in the Illinois School of Electro-therapeutics, Chicago. Pp. 595, with 156 illustrations in the text. Price, $3.00.

The literature on diseases of the eye, ear, nose and throat is comparatively scarce and the experience of the author, therefore, in finding so large a field in this department of medical science for the application of electricity justifies the presentation of this volume. The best thought of electro-therapeutics to date on the application of electricity is the author's contribution. The book is eminently practical. It describes cases, gives conditions, methods of application of electricity, and results.

The various forms of electricity and their application and individual character are discussed. The introductory chapter presents the physics of electricity with considerable minuteness. The experiences of practical workers with electricity as a therapeutic agent are crystalized; the specific action of the galvanic, foradic, sinusoidal, high-frequency or static current are clearly explained; the x-ray, electric cautery, electric lamp and vibratory massage are all considered. GOLDSTEIN.

3166

The Pituitary Body and Its Disorders. Clinical States Produced by Disorders of the Hypophysis Cerebri. An Amplification of the Harvey Lecture for December, 1910. By HARVEY CUSHING, M. D., Associate Professor of Surgery, the Johns Hopkins University. Cloth. Pp. 341, with 319 illustrations. Philadelphia: J. B. Lippincott Company, 1912. Price, $4.00.

The basis of this important monograph on the hypophysis was the series of the Harvey lectures before the New York Academy of Medicine, and the presentation of the results of clinical studies on a series of twenty patients with hypophyseal disease as recorded before December, 1910.

To this original series an equal number of cases have been added, and this enormous personal experience with the clinical and surgical affections resulting from these variations of hypophyseal disorders supplemented by experiments on animals, the classification or grouping of cases, and the minute case-reports constitute this authoritative monograph. Every page of this interesting and classic work reflects the individuality and originality of the author. There is such a close association of hypophyseal tumors with endo-nasal surgery as one of the selected routes of reaching this pathological field, and there has been such an impetus given, from the rhinological viewpoint, to this unusual surgery by the research and original technic of Hirsch of Vienna, that the whole question of disorders of the pituitary body deserves the closest and most careful study of every rhinologist, and this valuable contribution by Cushing should be read from cover to cover. GOLDSTEIN.

3167

Laryngeal Lesions of Cardio-vascular Affections. GIUSEPPE DE LUCA.

To be reviewed in a subsequent issue of THE LARYNGOSCOPE.

3169

Lehrbuch der Krankheiten des Ohres und der Luftwege einschliesslich der Mundkrankheiten. (Text-book of Diseases of the Ear and Upper Respiratory Tract, Including Diseases of the Oral Cavity). By DR. ALFRED DENKER, HALLE, A. S., AND DR. WILH. BRUENINGS, Jena. Pp. 643 with 305 illustrations. Verlag Gustav Fischer, Jena, 1912. Price, M. 14.

The justification for the production of this text-book as expressed by the authors in their preface lies in the closer association which they have attempted to develop between the several special departments that may justly be included in the field of oto-laryngology.

The several chapters which constitute the scientific subdivisions of this text-book are distributed between the authors Prof. Denker and Dr. Bruenings as follows: 1. "Diseases of the ears;" 2. "Diseases of the nose and accessory sinuses;" and, 3. "Diseases of the naso-pharynx," by Prof. Denker. 4. "Diseases of the oral cavity;" 5. "The mouth and pharyngeal cavity;" 6. "The larynx;" and 7. "The trachea and bronchi," are contributed by Dr. Bruenings; thus forming the seven main chapters of the treatise.

Each chapter exhaustively discusses the various phases of this field. The text is unusually clear and concise. The operations on the ear, nose and larynx, which might at first glance be considered superfluous, are included in this modern text-book.

The chapter on the examination of the deeper air-tract by Bruenings is perhaps a little too technical for the internist and practitioner, not especially engaged in laryngology.

Some of the views expressed by the author are not universally accepted but it is their individual strength that gives them greater prominence in this volume.

The illustrations are unusually fine, especially the colored plates.

GOLDSTEIN.

3174

Die Krankheiten der Mundhoehle, des Rachens und der Nase. (Diseases of the Oral Cavity, Pharynx and Nose). By DR. L. GRUENWALD, Munich. Third, revised and enlarged edition. Pp. 801, with 10 colored and 220 illustrations in black and white. J. F. Lehmann's Verlag, Munich, 1912.

Of all the valuable atlases published by Lehmann of Munich this, the third edition of Gruenwald's "Diseases of the oral cavity, pharynx and nose" is one of the most important and complete.

Though but a few years have elapsed since the appearance of the second edition, the rapid progress in this special field of medicine have made this third, thoroughly revised and largely re-written edition imperative.

For a more lucid comprehension of the newer anatomy and pathology of the nasal cavities, the author presents embryological data and illustrations dependent on a careful study of dissections and serial sections of 200 heads of adults and children, and 50 of the human fetus; also a large series of heads of mammals to illustrate points of value in comparative anatomy and physiology.

The region of the faucial tonsil has also been given much prominence in this new edition, and its anatomical and surgical aspects have been fully illustrated and discussed.

In part I there are 29 half-tones, 10 colored plates, and 220 diagrammatic and anatomical drawings, a total increase from 141 to 371 in this edition of the atlas; this third edition also comprises more than three times the number of pages of text found in the former edition. There are numerous radiograms to illustrate the pathology of the accessory sinuses and an excellent series of colored plates to present the topography and anatomy of these accessory spaces.

This atlas of 800 pages with its elaborate series of illustrations and concise descriptive text is one of the most remarkable productions of its kind that we know in our literature. GOLDSTEIN.

3175

Diagnosis and Treatment of Cicatricial Stenoses of the Esophagus. M. GUISEZ.

To be reviewed in a subsequent issue of THE LARYNGOSCOPE.

3180

Operative and Clinical Treatment in Laryngoscopy and Laryngology. T. HERYNG. Masson et Cie, 1912.

Reviewed in THE LARYNGOSCOPE, p. 159, Feb., 1913.

3181

On Gastroscopy and Esophago-gastroscopy. By WILLIAM HILL, B.Sc., M.D. London: John Bale, Sons and Danielsson, London, 1912. Price, 3s. 6d. net.

This monograph is an expansion of a paper with demonstration on the living subject given before the surgeons at the meeting of the British Medical Association, Birmingham, July, 1911. In it the author traces the evolution of the present-day methods of gastroscopy indicating their technic and shortcomings, and describing, with illustrations, his own instrument consisting of two parts, an outer straight tube, the esophago-gastroscope, and an inner periscope. GOLDSTEIN.

3185

A System of Treatment by Many Writers. Edited by A. LATHAM AND T. C. ENGLISH.

Reviewed in THE LARYNGOSCOPE, p. 238, March, 1913.

3187

Hoarseness in Singers. HENRI LAVIELLE.

To be reviewed in a subsequent issue of THE LARYNGOSCOPE.

3189

Ostitis Chronica Metaplastica of the Human Labyrinth-capsule P. MANASSE. J. F. Bergmann, Wiesbaden, 1912.

Reviewed in THE LARYNGOSCOPE, p. 160, Feb., 1913.

3191

Oral Surgery; A Text-book on General Surgery and Medicine as Applied to Dentistry. S. L. MCCURDY. D. Appleton and Co., N. Y., 1912.

Reviewed in THE LARYNGOSCOPE, p. 996, July, 1912.

3192

Diseases of the Mouth. By J. VON MIKULICZ AND W. KUEMMEL. Gustav Fischer, Jena, 1912.

The third edition of this valuable work on diseases of the mouth, originally published by Profs. Mikulicz and Kuemmel, has just been issued by Prof. Kuemmel. The need of this new edition following so closely in the wake of the former one indicates its scientific merit and its popularity, and also the important progress made in this field that has given rise to the revision of many of these chapters.

Among the important features in this revision we must note the comprehensive bibliography carefully compiled from all sources.

A number of new illustrations, several of which are in colors, have been added. The revision seems to be apparent in all of the chapters of this treatise.

Professor A. Czerny of Strassburg, and J. Schaeffer of Breslau, have collaborated with the author in the production of this excellent volume. It presents this special field of work thoroughly, concisely, practically and attractively, and should prove of much value not only to the rhinolaryngologist but also to every internist, surgeon, dermatologist, pediatrician and dentist.

GOLDSTEIN.

3194

Die Sprach-und Stimmstoerungen im Kindesalter. (Voice and Speech Disturbances in Childhood). By DR. MAX NADOLECZNY, Munich. Pp. 893, with 2 plates and 33 illustrations in the text. Verlag F. C. W. Vogel, Leipzig, 1912.

This monograph is an important contribution to the "Handbook of Pediatrics," by Pfaundler-Schlossmann.

The author attempts to classify psychologically and physiologically the various defects of speech and discusses the origin of speech and its relation to such psychology and physiology.

In this classification are considered: Deafness, defective hearing, deaf-blindness, sensoric aphasia, deaf-mutism, stammering, stuttering, lisping, etc.

Nadoleczny also considers the various types of speech-defects as symptoms of other diseases, as for instance the functional diseases of the nervous system.

The most original chapter of especial interest to oto-laryngologist, is that referring to speech-disturbances in childhood and their treatment.

Though Nadoleczny is a pupil of Gutzmann, this monograph shows much individuality and originality in its disposal of the practical phases of this question. GOLDSTEIN.

3195

Lip-reading; Principles and Practice. A Handbook for Teachers and for Self-instruction. By EDWARD B. NITCHIE, B. A., Principal of the N. Y. School for the Hard-of-Hearing. Pp. 324, Frederick A. Stokes Co., New York, 1912. Price, $1.50.

The development of lip-reading as a system for the instruction of the deaf and as an advanced method of teaching has been so actively stimulated in the past few years that all good literature on this subject should be eagerly sought and read by every otologist.

Mr. Nitchie has been a successful teacher of lip-reading for many years, and his ripe experiences are recorded here in tangible form.

In Part 1 of this book the meaning and value of teaching the deaf by lip-reading is set forth, and a systematic course of study is thoroughly outlined.

Part 2 includes many stories and exercises, together with lists of homophonous words to guide the student.

The whole comprises a rather exhaustive, systematically arranged text-book on lip-reading, and should be of inestimable value not only to all teachers of the deaf but also to the hard-of-hearing adults who have taken up this work in order to overcome this serious handicap to their social intercourse, and finally to every otologist who wishes to inform himself concerning this modern and effective method of disposing of this class of cases in his practice for which his professional treatment can be of no further avail. GOLDSTEIN.

3196

Pathological Anatomy of the Ear. RUDOLF PANSE.

Reviewed in THE LARYNGOSCOPE, p. 240, March, 1913.

3200

Diseases of the Throat, Nose and Ear for Practitioners and Students. W. G. PORTER.

Reviewed in THE LARYNGOSCOPE, p. 237, March, 1913.

3202

Surgery of Deformities of the Face. J. B. ROBERTS. Wm. Wood and Co., N. Y., 1912.

Reviewed in THE LARYNGOSCOPE, p. 994, July, 1912.

3203

Klinik der sercesen und eitrigen Labyrinthentzuendungen. (Serous and Suppurative Labyrinthitis). By Dr. Erich Ruttin, Vienna. Preface by Dr. V. Urbantschitsch. Pp. 196. Verlag, Joseph Safar, Vienna and Leipzig, 1912. Price, M. 6.50.

The abundant clinical material which has been placed at his disposal for the entire period that the newer path of labyrinthine infection has been actively promulgated by the Vienna school qualifies Ruttin in an exceptional way to present this monograph of his results in the observations of serous and suppurative labyrinthitis.

The author introduces his subject by a review of the functional tests to differentiate the various types of labyrinthitis and the clinical deductions by which their diagnosis and complications are more readily determined.

It is only by the presentation of carefully observed results of such well-qualified clinicians that this important advance in the pathology, diagnosis and surgery of labyrinthitis will make the most definite progress.

The clinical records of over 100 cases observed by the author are carefully digested and substantiated. His general conclusions and special deductions are more accurately valuable than a whole volume of theories and hypotheses. Goldstein.

3206

Stuttering and Lisping. By E. W. Scripture, Ph. D., M. D., Associate in Psychiatry, Columbia University; Director of the Research Laboratory of Neurology, Vanderbilt Clinic. Pp. 251, illustrated. The Macmillan Company, New York, 1912. Price, $1.50.

The author in his preface remarks: "It would be difficult to find a group of people more neglected by medicine and pedagogy than that of stutterers and lispers. The stuttering children that encumber the schools are a source of merriment to their comrades, a torment to themselves, and an irritating distraction to the teacher. As they grow older, the stutterers suffer tortures and setbacks that only dauntlessness or desperation enable them to survive. The lispers that are so numerous in certain schools are a needless retardation to the classes.

In several European countries the state has established special opportunities for treating children with speech defects, but the matter has not received the full attention justified by its importance. In most medical faculties no place is recorded to speech-defects; the same is true in schools of pedagogy. This was formerly justified on the ground that a scientific study of speech and its defects did not exist. In the last decade, however, the science of phonetics has extended itself to laboratory work and university teachings; moreover, speech clinics have been established in several of the foremost medical schools. The treatment of these defects thus stands upon an entirely new basis, namely that of a carefully developed science of normal and pathological speech."

The long experience of the author in experimental psychology and experimental phonetics, and the treatment of the many patients in the speech department of the Vanderbilt Clinic eminently qualifies him in the presentation of this practical and serviceable volume. Goldstein.

To carefully read this book and glean from it the description of the causes, forms, nature and method of treating stuttering and lisping will be a source of untold profit to every laryngologist who desires to intelligently advise that large class who consult him for advice as to the proper disposal of these defects of speech. GOLDSTEIN.

3208

Researches and Experiences. F. SEMON.

Reviewed in THE LARYNGOSCOPE, p. 1396, Dec., 1912.

3209

Asthma. WOLFGANG SIEGEL.

Reviewed in THE LARYNGOSCOPE, p. 237, March, 1913.

3214

Skiagraphy of the Accessory Nasal Sinuses. A. L. TURNER AND W. G. PORTER. Wm. Green and Sons, Edin. and London, 1912.

Reviewed in THE LARYNGOSCOPE, p. 1076, Aug., 1912.

3216

Practical Medical Series Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Vol. 3: The Eye, Ear, Nose and Throat. Edited by A. WOOD, A. H. ANDREWS, AND G. P. HEAD. The Year-book Publishers, Chicago, 1912.

Reviewed in THE LARYNGOSCOPE, p. 80, Jan., 1913.

3217

Diseases of the Mouth. For Physicians, Dentists, Medical and Dental Students. By PROF. DR. F. ZINSSER, Director of the Department of Dermatology at the City Hospital, Lindenburg. Translated and Edited by John Bethune Stein, M. D., Professor of Physiology at the New York College of Dentistry. Cloth. Price, $7. Pp. 268, with 73 illustrations. New York: Rebman Company, 1912.

This volume is virtually a complete atlas of syphilis and similar diseases of the mouth in their various stages, and contains a wonderful series of chromographic plates of the original collection of moulages from the museum of the Hospital of St. Louis in Paris gathered by Prof. Zinsser not alone from the dental clinic but also from those scattered about in clinics of laryngology, surgery, internal medicine and pediatrics.

The introductory chapter is devoted to syphilis in general, its various stages, its specific manifestations in the mouth and various organs of the buccal cavity, diseases of the mouth similar to those of secondary and tertiary syphilis, a description of their differentiation, and additional paragraphs relating to the spirochetes, the Wassermann reaction and Noguchi luetin.

The colored plates are, of course, the feature of this volume and we may confidently assert that they are the finest, best executed, and most life-like examples of color-process of the printer's art that we have ever seen. No laryngologist can afford to be without this important collection of syphilochromes. GOLDSTEIN.

Addition and correction to the paper on "The Monochord" by Dr. Max A. Goldstein, in the issue of THE LARYNGOSCOPE, March, 1913, page 216.

The following addition should be made to this paper: On the steel bar of each monochord instrument an arbitrary number, approximately 251,000, is stamped at the left-hand end. This number, divided by the number of centimeters noted in a given test specifies the longitudinal vibrations per second.

For example, my personal monochord instrument bears the test-number 250,800. At 10 centimeters (divide 250,000 by 10) the patient hears 2508 longitudinal vibrations; 40 cm.. =6270 longitudinal v. d. In this way we have a simple formula for determining with accuracy the actual number of longitudinal vibrations.

Attention is called to the typographical error on page 219 in the March, 1913, issue of The Laryngoscope, and in the corresponding page of the reprint of this article (page 6). The eighth line from the bottom reads: "The tone at this chord-length (43 cm.) is 43, 500 transverse vibrations and 8,705 longitudinal vibrations." This should read: 435 transverse vibrations and 5,837 longitudinal vibrations.

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ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

ESOPHAGEAL TUBERCULOSIS; A CRITICAL REVIEW.*

DR. LORENZO B. LOCKARD. DENVER.

A thorough review of the literature of esophageal tuberculosis shows that the frequency of this condition has been somewhat underestimated, although it proves that no other organ is so seldom affected by tuberculosis.

Until the perfection of the present instruments of precise examination, study of the disease was limited to autopsy-findings; hence its discussion was of purely academic interest. To-day, when the condition is capable of clinical observation, a new interest attaches that warrants more thorough investigation.

Tuberculous ulceration of the esophagus, regardless of locale or extent, rarely produces distinct subjective symptoms, and seldom occurs until late in the course of pulmonary, intestinal, and laryngeal disease, when such symptoms as might otherwise be evident are completely masked by those attending these earlier and graver localizations. In only a few cases has this pathological condition dominated; hence our knowledge is based almost entirely upon the lesions discovered at autopsy.

The first case was recorded by Denonvilliers[1] in 1837, and six years later, Louis[2] reported finding six cases of esophageal ulceration, presumably of a tuberculous nature, in 120 tuberculous cadavers. As late, however, as 1877, Zenker[22] wrote: "Whether tuberculosis and tuberculous ulcers occur in the esophagus is not yet definitely proved."

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*Candidate's thesis presented to the meeting of the American Laryngological, Rhinological and Otological Society, May, 1912.

In the seventy-four years that have elapsed since this first observation, 103 cases have been recorded; of these fourteen cannot be analyzed; to twenty doubt attaches owing to the lack of histological or other confirmatory proof; and sixty-nine can, with reasonable certainty, be classed as tuberculosis.

Of the twenty doubtful cases, thirteen concerned patients in whom the esophagus became perforated as a result of tuberculosis of contiguous structures, without, however, producing lesions of a proved tuberculous character in the esophageal mucosa itself.

The rarity with which the esophagus succumbs to the tubercle bacllli is best shown by its comparison with other important organs:

Esophagus involved 25 times in 16,489 autopsies on tuberculous cadavers. Stomach involved 62 times in 13,500 autopsies on tuberculous cadavers. Uro-genital system involved 1,105 times in 7,501 autopsies on tuberculous cadavers. Kidneys alone involved 321 times in 2,237 autopsies on tuberculous cadavers. Heart and pericardium involved 73 times in 3,017 autopsies on tuberculous cadavers. Liver involved 321 times in 2,858 autopsies on tuberculous cadavers. Spleen in volved 333 times in 3,471 autopsies on tuberculous cadavers. Pancreas involved 6 times in 3,131 autopsies on tuberculous cadavers. Bones involved 32 times in 1,085 autopsies on tuberculous cadavers. Intestines, peritoneum and retro-peritoneal glands involved 1,567 times in 21,484 autopsies on tuberculous cadavers. Brain involved 17 times in 3,131 autopsies on tuberculous cadavers. Meninges involved 145 times in 5,578 autopsies on tuberculous cadavers. Adrenals involved 33 times in 2,471 autopsies on tuberculous cadavers. Appendix involved 98 times in 1,340 autopsies on tuberculous cadavers. Pharynx involved 187 times in 11,189 tuberculous patients. Larynx involved 2,003 times in 14,980 tuberculous patients. Nose involved 46 times in 7,941 tuberculous patients. Ear involved 66 times in 1,135 tuberculous patients. Tonsils involved 240 times in 2,979 tuberculous patients. Tongue involved 13 times in 1,140 tuberculous patients. Skin involved 536 times in 123,746 cases examined. Meninges involved 3,509 times in 187,055 cases examined.

In these statistics a duplication may have occurred in certain instances, as in the reports of some writers the names of those reporting have not been given.

The autopsy reports upon the esophagus are from the following observers: Voelcker, 5 times in 2,504 cadavers. Willigk, 1 time in 1,317 cadavers. Sanger, 3 times in 1,226 cadavers. Zemann 3 times in 100 cadavers. Louis, 6 times in 120 cadavers. Frerichs, 1 time in 30 acute cases. Frerichs, 1 time in 205 chronic cases. Wiederhofer, no times in 875 chronic cases. Hecker, no times in 1,200 chronic cases. Caselmann, 5 times in 8,912 chronic cases.

That the esophagus possesses a high degree of immunity is attested by the infrequency of its involment, despite the fact that it is constantly exposed to direct infection by the food and sputum. This immunity can be ascribed to several factors, anatomical and physiological:

Probably the most potent protection is that afforded by the conformation of the tube, both minute and gross. To the entrance of the bacilli is opposed a perpendicular tube of fairly uniform caliber, without points of sudden shelving (although the mucosa is thrown into longitudinal folds and there are a number of points, about thirteen, of greater or less constriction) and lined by a well developed layer of stratified squamas epithelium, a tissue everywhere resistant to the invasion of tubercle bacilli.

A second reason for the rarity of involvement is to be found in the rapidity with which deglutition occurs, the masses of food or sputum, usually well enveloped by mucous and saliva, being forced downward so rapidly that any contained organisms find slight opportunity for lodgement. Moreover, their retention is made difficult by the frequent movements to which the tube is subjected and its frequent flushing by fluids. This immunity is also possessed by animals.

In those instances in which infection has occurred through the sputum, it has, almost without exception, been in individuals in whom the esophagus was predisposed through traumatism or disease, or greatly reduced in vitality through the cachexia induced by advanced tuberculosis of the lungs, intestines, larynx, and other organs.

Thirty-two cases of probable sputal infection have been recorded: of these four were associated with cancer of the same tissues; six followed the ingestion of acids or the development of thrush fungus; and twenty-two occurred independent of other disease. Eleven of these twenty-two had intestinal tuberculosis, and all had advanced disease of the lungs, usually complicated by other organic involvement.

Primary esophageal tuberculosis has not yet been observed, although there is strong grounds for the belief that the first infection of the body, in some cases of glandular tuberculosis, occurs by way of the esophagus. S. G. Shattock, in 1902, exhibited before the London Pathological Society the esophagus of a python that showed a

No.	AUTHOR.	Cases	1st Class	2nd Class	3rd Class	4th Class	5th Class	6th Class	7th Class	8th Class	YEAR.	PUBLICATION.
1	Denonvilliers	1							1		1837	*Bull. Soc. Anat.*, Paris.
2	Louis	6									1843	Recherches anatomiques pathologiques.
3	Oppolzer	1									1851	*Wien. med Wchnschr.*, Nos. 5 and 6.
4	Barth	1							1		1853	*Bull. Soc. Anat.*, Paris.
5	Willigk	1									1856	*Prag. Vierteljahrschr.*, vol. 13, 2-3.
6	Uhde	2						2			1856	*Deut. Klinik.*, Nr. 3, p. 33.
7	Chvostek	1			1						1868	*Oester. Ztschr. f. Heilkunde.*
8	Paulicki	1			1						1868	*Virchow's Arch.*, Bd. 44.
9	Loeschner	1						1			1868	Aus den Franz. Joseph's Kinderspital. Virchow's Jahresbericht, 1868, vol. 2, 643.
10	Breus	1	1								1878	*Wien. med. Wchnschr.*, p. 258.
11	Spillmann	1			1						1878	De la tuberculisation de tube digestif., Paris.
12	Sanger	3									1879	Leipzig Pat. Institute. Heinze.
13	Gruenewald	1							1		1880	Esophageschwur der Speisroehre. Erlangen.
14	Eppinger	1	1								1881	*Prag. med. Wchnschr.*, 51.
15	Penzoldt	3						3			1881	*Virchow's Archives*, Bd. 86, p. 448.
16	Frerichs	1			1						1882	Beitraege zur Lehre von der Tuberk, p. 96.
17	Beck	2				1			1		1884	*Prag. med. Wchnschr.*, Nr. 35.
18	Kundrat	1	1								1884	London Path. Soc. Trans., Vol. 36.
19	Weichselbaum	1							1		1884	*Wien. med. Wchnschr.*, 5-6.
20	Zelenkoff	1							1		1884	*Petersburger med. Wchnschr.*, 491.
21	Polandt	1							1		1885	Trans. London Path. Soc., Vol. 36.
22	Mazzotti)	3			9		2		1		1885	*Rivista clinica di Bologna*, Jan.
	")	9									1896	Dal. *Bulletino di Scienze med. di Bologna*, Vol. 7, p. 553.
23	Barry	1							1		1885	*Med. News.* Phila., p. 236.
24	Zemann	3									1886	*Wien. med. Wchnschr.*
25	Pitt	1							1		1887-88	Trans. London Path. Soc., Vol. 39, 107.
26	Birch-Hirschfeld	1				1					1887	Lehrbuch der Path. Anat., Vol. 2, p. 518.
27	Hanot	1							1		1887	A de med. general., Sept., p. 352.
28	Ortn	3				1			2		1887	Lehrbuch des Spez. Path. u Ther.
29	Volcker	5			1				4		1890	Trans. London Path. Soc., Vol. 42.
30	Nowak	1							1		1890	*Muench. med. Wchnschr.*, Nr. 18.
31	Zenker)	1		1					2		1891	*Deut. Arch. f. klin. med.*, Vol. 47, 191.
	")	2									1895	*Ibid.*, Vol. 55, p. 405.

No.	AUTHOR.	Cases	1st Class	2nd Class	3rd Class	4th Class	5th Class	6th Class	7th Class	8th Class	YEAR.	PUBLICATION.
32	Cordua	1		1							1893	Arbeiten aus den. path. Institute Gottingen, 147.
33	Letulle	2							2		1893	*Bull. Soc. Anat. de Paris*, Vol. 68, p. 246.
34	Flexner	1			1						1893-4	*Bull. Johns Hopkins Hospital*, Vol. 4.
35	Bauer	1			1						1894	1 Versammlung Suedeutschen Larying., Heidelberg.
36	Hasselmann	1			1						1895	Ueber Tuberk. des. Esoph., Bern.
37	Frankel	1			1						1896	*Muench. med. Wchnschr.*, Vol. 43, p. 27.
38	Glockner	1					1				1896	Prag. med. Wchnschr., Vol. 31.
39	Danel	1							1		1896	*Jour. des. sci. med. de Lille*, Vol. 19, p. 520.
40	Pepper-Edsall	1		1							1897	*Am. Jour. med. Sci.*, Vol. 14, p. 44.
41	Cone	1					1				1897	*Bull. Johns Hopkins Hosp.*, November.
42	Bartlett	2							2		1899	*Ann. Otol., Rhin. and Laryngol.*, Vol. 8.
43	Weyeneth	1		1							1900	Inaugural Dissert., Zurich.
44	Zerenin	1								1	1900-01	Trudi Obsh. *Russk. Vrach.*, Vol. 40, No. 1, p. 131.
45	Kraus	1	1								1902	Nothnagel's Spez. Path. u. Ther., Vol. 16, p. 214.
46	Schilling	2							2		1902	Festschr. des Aerztlichen Vereins, Nueremberg.
47	Shrubsall-Mullings	1			1						1902-03	Trans. London Path. Soc.
48	Noder	1				1					1903	Ueber Tuberk. des Esoph., Muenchen.
49	Lalague	1							1		1903	De la tuberc. de l'esophage. These Bordeaux.
50	Meyerhoff	1							1		1903	Cited by Busch., Wuerzburg.
51	Riviere	3							3		1903	*Brit. Med. Jour.*, Vol 1, p. 193.
52	Rocher	1	1								1904	*Jour. de med. de Bordeaux*, Vol. 34, p. 649.
53	Kauffmann	1						1			1904	*Bull. et mem. Soc. Anat. de Paris*, Vol. 79, p. 544.
54	Caselmann	1				1					1905	Sekundare Esoph. tuberk, Erlangen.
55	Starck	1					1				1905	*Ziegler's Beitraege*, p. 723.
56	Evert	1	1								1906	Tuberkulose des Esoph., Bern.
57	Kuemmel	1			1						1906	*Muenchener med. Wchnschr.*, Vol. 53, p. 453.
58	V. Scrotter	1					1				1906	Brauer's Beitraege zur Klinik der Tuberk., Vol 6, p.3.
59	Moure-Viel	1								1	1909	*Rev. hebd. de Laryngol.*, Vol. 2.
60	Lockard	1				1					1909	Tuberculosis of the Nose and Throat.
61	Guisez-Abrand	2			1				1		1909	*Rev. de Chir.*, Paris, Vol. 7.
62	Staehelin-Burckhardt	2			1		1				1910	*Arch. f. Verdauungskrankh.*, Vol. 16, No. 4.
63	Penrose	1							1			Cited by Voelcker.
64	Londe	1							1			Cited by Letulle.
		103	6	4	22	6	7	7	35	2		

primary tuberculous infection; Shattock claimed that the infection had occurred by invasion between the cells of the epithelium which remained intact without any ulceration.

A probable reason for immunity to primary infection is the absence, in the human esophagus, of any considerable aggregations of lymphatic tissue—tissue which is present in considerable amount in the python's esophagus, and which is peculiarly susceptible to tuberculous infection. There are, however, small masses of lymph tissue in the human esophagus: toward the lower end there are distinct nodules of small size, and above there are small, diffuse areas of infiltration around the ducts of the mucous glands.

In a case of acute miliary tuberculosis reported by Cone, the esophageal foci were limited to these lymph follicles in the lower two-thirds of the tube, the only case of this kind on record. This form might easily be overlooked owing to the insignificance of these structures, as only a microscopical examination would reveal their presence.

A thorough review of the literature, including such cases as those of Louis, Chvostek, Paulicki, Willigk, Kraus, Penzoldt, and Zenker, which, while probably tuberculous, have not the sanction of histological demonstration, and those of Polandt, Barry, Hanot, Nowak, Penrose, Voelcker and Riviere, which had perforations of the esophagus in consequence of tuberculosis of contiguous structures, without, however, showing proved tuberculosis of the esophageal mucosa, reveals the following 103 cases, of which eighty-nine have been analyzed.

These cases, according to the channels of infection, have been classified as follows: 1. Direct inoculation of tissues predisposed through traumatism. 2. Tuberculosis and cancer. 3. Direct inoculation without previous injury. 4. Extension from the larynx and pharynx. 5. Hematogenous infection. 6. Lesions dependent upon caries of the vertebrae. 7. Extension by continuity from caseous glands. 8. Unclassified: cases in which the channel of infection cannot be definitely traced.

1. SPUTAL INOCULATION OF TISSUES PREDISPOSED THROUGH INJURY.

In this group six cases are recorded: those of Breus,[10] Eppinger,[14] Kraus,[45] Evert,[56] Kundrat[18] and Rocher.[52]

Breus's case concerned a consumptive of 21 years who swallowed caustic potash and in consequence developed a stricture of the esophagus. The autopsy revealed numerous cicatrices and ulcers in the esophagus, pharynx, and stomach. The ulcers showed miliary and caseous tubercles. There was tuberculosis of the lungs, lymph glands, kidneys, spleen, and intestines.

In the case reported by Eppinger, a woman aged 45, there was stricture of the esophagus due to the thrush fungus. At the autopsy the fungus masses were removed showing the underlying mucosa occupied by numerous tuberculous ulcers. The thrush was likewise present in the trachea and there was advanced tuberculosis of the lungs. Eppinger believed that the tuberculous infection depended upon the previous invasion of the oidium saccharomyces. A similar case was observed by Kraus in which the middle third of the esophagus was covered with thrush and occupied by a large tuberculous ulcer, 1½ cm. in diameter. The patient seen by Evert had had tuberculosis for ten years when he attempted suicide by drinking muriatic acid. A month later he expelled a large tube-like piece of membrane covered with pus and blood, and twelve weeks later died in convulsions. Autopsy findings were: Tuberculosis of both apices; widespread scarring of the esophageal mucosa; ulceration and tubercles containing tubercle bacilli.

Kundrat's case was of a similar nature, the tuberculous infection occurring upon a mucosa previously destroyed by sulphuric acid.

Rocher's patient was a girl, 12 years of age, who, one month after drinking a solution of potassium, developed symptoms of stricture. Gradual dilatation was practiced. Hemoptysis occurred after eight months, followed by cough and cachexia, with death from tuberculous broncho-pneumonia.

Autopsy: Broncho-pneumonia; cavity in left apex; pleural adhesions; esophagus surrounded by enlarged non-caseous glands; stricture at the middle of broncho-diaphragmatic segment; walls 6 mm. thick; hour-glass shape; no dilatation above but mucosa extensively ulcerated.

Rocher's conclusions were: First stage: Esophagitis from caustic. Second stage: Debility from want of nutrition, leading to pulmonary tuberculosis. Third stage: Swallowing of sputum, transplanting bacilli upon already altered mucous membrane.

2. CASES IN WHICH THE ESOPHAGUS WAS COINCIDENTLY AFFECTED BY CANCER.

It includes the cases of K. Zenker,[31] Cordua,[32] Edsall and Pepper,[40] and Weyeneth.[43] In Zenker's case there was a stricture of the tube due to an ulcer that involved the entire circumference, which, on microscopic examination, proved to be a squamous epithelioma. It extended from the mucosa into the muscular layer. In the borders of the cancerous tissue were found typical tubercles some of which had undergone caseation. The neighboring lymph glands were involved by both diseases. Tubercle bacilli were found in the tubercles.

A somewhat similar case, in a man, 60 years of age, was described by Cordua. The entire lumen of the tube, on a level with the bifurcation of the trachea, was invaded by cancerous tissue, in the center of which and about the periphery were typical tubercles containing giant cells. From the center of the mass an opening extended into the peri-esophageal tissues but not into the trachea.

Pepper and Edsall found combined cancer and tuberculosis in the esophagus of a man of 42, who had suffered a long time from pulmonary and laryngeal tuberculosis. The entire tube, above the level of the arch of the aorta, was occluded, and the walls were converted into a dense mass of fibrous tissue, adherent to the vertebrae. In this fibrous mass they found cancerous tissue, as well as tubercles, giant cells, and tubercle bacilli. Pepper and Edsall believed that the first cause was tuberculosis, owing to the fact that the central and deeper portions of the tumor were composed of fibrous tissue.

The last case of the series is that described by Weyeneth and concerns a man of 58, who had had pulmonary tuberculosis for five years; for four years suppuration and deafness of left ear; later involvement of right ear. At time of examination there had recently developed difficult deglutition, and vomiting after eating. A sound was passed into the stomach without meeting an obstruction. After three weeks death occurred. The cause was given as "Tuberculosis pulmonum et intestini."

The autopsy showed tuberculosis of both lungs and several ulcers in the neighborhood of the ileo-cecal valve. On the anterior wall of the esophagus, on a level with the bifurcation, was an oval ulcer that macroscopically gave the impression of an ulcerated tumor. Surrounding the ulcer was an area over which the mucosa was destroyed. Scattered throughout this denuded area were numerous small nodules, both isolated and grouped. Granulation tissue covered the base of the ulcer, and the esophageal wall in the neighborhood of the ulcer was thickened.

Microscopically the chief mass was found to be composed of cancer tissue with recent tuberculosis (bacilli were found in the surrounding nodules) about the periphery.

In this case the sequence was: tuberculosis of the lungs and intestines; carcinoma of the esophagus; tuberculosis of the esophagus. Weyeneth's opinion, concurred in by Professor Ribbert, was that the malignant growth antedated by several months the tuberculous invasion. Infection by the sputum seems probable as there were no foci in the neighboring lymph glands.

Tuberculosis of the lungs is very common in cases of cancer, wherever located; so it is not remarkable that it should also occur in the tissues directly affected by the growth. It is claimed that although the condition induced by cancer tends to the invasion of the body by the tubercle bacilli, it is inimical to the spread of the disease, and that, therefore, pulmonary tuberculosis is rarely found in an active state, and is almost always retrogressive. The last case cited does not support this supposition.

3. DIRECT INOCULATION BY SPUTUM, WITHOUT PREVIOUS INJURY. Sputal infection of the intact esophageal mucosa has been considered extremely rare but I have been able to collect twenty-two cases that may be so classified. Owing, however, to the frequent co-existence of ulcers and nodules, it is not always possible to positively determine whether the infection is of sputal or hematogenous origin.

In this group are the cases reported by Spillman,[11] Mazzotti (nine cases),[22] Frankel, [37] Voelcker,[29] Hasselmann,[36] Chvosteck,[7] Bauer,[35] Paulicki,[8] Kuemmel,[57] Shrubsall and Mullings,[47] Staehelin-Burckhardt,[62] Frerichs,[16] Flexner,[34] and one of Guisez and Abrand's.[61]

In Spillman's case there was a small perforation leading from the center of an ulcer which occupied the middle of the tube, into the left bronchus. There was pleural tuberculosis and enlarged bronchial glands. This case, in which there had been symptoms of stricture, was one of two recorded in which a tubercular ulcer originating in the esophagus perforated the walls. The other case was reported by Flexner. Of the twelve cases seen by Mazzotti, at least nine belong in this group:

Case 1: Mazzotti's first case was a man of 39 years with advanced tuberculosis of the lungs and intestines. In the lower portion of the esophagus were numerous tubercles, some of which were ulcerated.

Case 2: The second case was a woman of 33. The entire esophageal mucosa was hyperemic, the cardiac end being the more injected. Scattered throughout this inflamed area were numerous ulcers, tubercular in nature. Near the cardiac orifice was a very large, irregular ulcer, produced by the coalescence of a number of smaller ones. Death was due to pulmonary tuberculosis.

Case 3: His next case concerns a man of 40 years, who died of pulmonary tuberculosis. For two months before death he had experienced a sensation of burning on deglutition. At the upper orifice of the esophagus were several small, broken-down tubercles, and beneath these, in the middle and lower thirds, two isolated ulcers of comparatively large size.

Case 4: The fourth case was a woman of 35 years, who, in addition to pulmonary tuberculosis, had rather extensive involvement of the esophagus, the ulcers extending throughout the middle and inferior thirds.

Case 5: In another case, a man 60 years of age, the lower half of the esophagus contained about thirty elliptical ulcers that increased in size as they approached the cardiac orifice. Death was occasioned by advanced pulmonary and intestinal tuberculosis.

Case 6: This case, a young man of 18 years, presented conditions which were similar to those of Case 4.

Case 7: A man, 67 years of age, who had pulmonary and intestinal tuberculosis, was found, on autopsy, to have numerous ulcers in the upper part of the esophagus, and a traction diverticulum as large as the end of the little finger at the junction of the middle and lower third. The mucosa, between the diverticulum and ulcers, was dotted with numerous tubercles.

Case 8: The eighth case was a woman, age 48, who also had intestinal and pulmonary tuberculosis. In the midst of an intensely congested area in the lower two-thirds of the esophagus was a mass of ulcers, about 15 in number, superficial and small, with one exception.

Case 9: The last of Mazzotti's cases to fall in this group was that of a man of 61 years. The upper part of the esophagus contained four or five ulcers, and there was chronic tuberculosis of the lungs. Tubercle bacilli were found in all of Mazzotti's cases.

Frankel describes the case of a man, 33 years old, who died of intestinal and pulmonary tuberculosis. The esophagus was the seat of a large number of small, yellowish nodules, some of which were ulcerated, and of several round ulcers. Tubercle bacilli were found. Frankel could not determine whether he had to deal with a hematogenous infection or one due to the sputum.

Voelcker's case, one of the five described by him, concerned a child of 5 years, who upon post-mortem examination, showed an oval ulcer, three-fourths of an inch long, on the anterior wall of the esophagus at the level of the bifurcation of the trachea. Voelcker says "The muscular coat remains, the floor is smooth as if healed, although in the neighborhood of a caseating gland. The ulceration, as far as could be seen, had not started from or been in any way caused by the gland."

Hasselmann's report deals with an infant boy, 6 months old, in whom there were lesions in the esophagus, both lungs, the intestines, and the bronchial and mesentric glands. In the lower part of the esophagus were two deep ulcers, the lowermost lying immediately above the cardia. Microscopic examination proved them to be tuberculous.

The cases reported by Chvostek and Paulicki have been rejected by various writers owing to a failure of histological confirmation, but were probably tuberculous. The former observed a patient, 43 years of age, who, for several weeks preceding death, complained of some difficulty in swallowing. At autopsy he found numerous round and oval ulcers in the lower portion of the esophagus. Surrounding the ulcers were numerous yellowish-white nodules from some of which a pus-like fluid could be expressed. Paulicki's case was an old man of 74 who had suffered from difficult deglutition, and whose esophagus contained a stricture on a level with the cricoid cartilage. A large ulcer was found on the posterior wall and a smaller one beneath and to one side of this.

One of the few cases in which a clinical diagnosis has been made was exhibited by Bauer and later reported by K. Zenker. The sound revealed an obstruction 22 cm. from the teeth. There was extreme dysphagia. On a level with the cricoid cartilage the esophagus had been girdled by an ulcer leading to partial stenosis. Tuberculosis was proved by histological examination, and there was in addition tuberculosis of both lungs. The larynx was free. Diagnosis had been made by exclusion. This case is practically identical with the one described by Paulicki.

In a man, dead of tuberculosis of the lungs, trachea, and intestines, Shrubsall and Mullings found a large, tuberculous ulcer, that involved almost the entire circumference of the esophagus. There had been no symptoms referable to this organ.

In Kuemmel's case also there had been an entire lack of subjective symptoms although the esophagus was the seat of a large ulcer, 13 cm. long, that occupied the entire width of the tube. The lungs were extensively involved, and there was tuberculosis of the intestines, larynx, prostate, and peri-bronchial glands.

Another case of this nature is that recorded by Staehelin-Burckhardt, and concerns a man 60 years of age, who was admitted to the hospital with a diagnosis of pulmonary emphysema and chronic bronchitis. There was no history of difficult deglutition. Death occurred within a few hours and the autopsy disclosed a large ulcer beneath a group of miliary tubercles, the affected area lying 5.5 cm. below the base of the cricoid. Somewhat below the ulcer, in the middle line, was a typical traction diverticulum. Tubercle bacilli were found in the ulcer, and there was tuberculosis of both lungs and of the intestines.

Frerichs observed a girl of 8 years who had tuberculosis of the lungs, pharynx, kidneys, intestines and esophagus. In the esophagus, in the lower third, were several tuberculous ulcers surrounded by nodules.

The case recorded by Flexner is the second one in which an ulcer originating in the esophagus perforated the walls. In this instance the perforation was into the left pleural cavity, in Spillmann's, into the left bronchus.

The autopsy report as given by Flexner, follows: "For a distance of 4.5 cm. the esophagus lies freely exposed in the left pleural cavity. At a point 2.5 cm. above the arch of the aorta, where the left common carotid is given off, there is a perforation leading directly into the lumen of the esophagus. The tissues surrounding the esophagus are edematous and hyperemic, and a considerable loss of substance has occurred in the connective tissue covering it. For a space of 4x2 cm. the connective-tissue sheath is entirely wanting, or very thin. On section of the esophagus there are, in the anterior wall but somewhat to the left of the middle line, two ulcers, measuring 7.5x4 mm. The more superficial one reaches the muscular coat but does not penetrate beyond, while the other has perforated the esophagus and communicates by a small opening with the left pleural cavity."

The subject was a woman, 33 years old, who had tuberculosis of the lungs, pleura, intestines, and the cervical and bronchial glands, as well as of the pyo-pneumo-thorax. Flexner did not believe the tuberculous pleurisy was a result of the perforation.

The case observed by Guisez and Abrand is particularly interesting in that it was subjected to exact clinical study, and the results of treatment could be accurately observed: A man of 34, who gave no history of syphilis, had been ill for one year with progressive anemia, accompanied by severe cough and expectoration. For the previous month he had had some dysphagia, which suddenly, during the course of a meal, became so severe as to lead to the belief that a foreign body had lodged in the gullet. The pain disappeared and reappeared at intervals, and finally became permanent. An ulcer, grayish in color, and surrounded by a pale mucosa, 1½ cm. long by ½ to 1 cm. wide, was located 20 cm. from the dental arch. The dilatation, occasioned by the esophagoscopy, relieved the dysphagia, and was repeated fifteen days later. The patient had improved both in weight and appearance. At the second treatment the ulcer was touched with 50 per cent lactic acid, and dilatation did not occasion pain. Three treatments were given with great relief, but death occurred from the pulmonary process one month after the beginning of treatment.

Guisez and Abrand class this case as one due either to emboli by lymph or blood stream, or to a direct primary infection. As there was pulmonary disease, accompanied by copious expectoration, the assumption is warranted that the esophageal lesion was a result of sputal infection.

4. DIRECT EXTENSION FROM THE PHARYNX AND LARYNX: In this group can be placed the cases of Beck,[17] Birch-Hirschfeld,[26] Orth,[28] Noder,[48] Caselmann,[54] and the author.[60] In Beck's case, a man of 54, there was extensive ulceration of the lower pharynx, the base of the tongue, and the upper esophagus in its entire circumference. For three months before death the patient had had difficulty in swallowing.

Direct extension into the esophagus from the larynx and pharynx was seen by Birch-Hirschfeld, and from the pharynx by Orth. Noder described a case in which extension occurred from lesions in the lower pharynx and recessus pyriformis, and Caselmann one in which the upper aperture of the larynx, including the epiglottis and the upper esophagus, was involved by ulceration.

The specimen examined by the author was from a patient of 38 years, in whom the presence of such a focus had been unsuspected. Such symptoms as might otherwise have been noticeable were completely masked by the severe dysphagia attending the laryngeal lesions. Both arytenoid cartilages, the aryteno-epiglottidean folds, and the epiglottis were extensively infiltrated and ulcerated, and the upper third of the esophagus was the site of three groups of ulcers. The uppermost group was in direct connection with the ulcers at the laryngeal orifice; the middle group, consisting of four small ulcers, was opposite the cricoid cartilage; the lowermost, consisting of one large ulcer in the center, and one small erosion toward the left lateral wall, was nearly on a level with the bifurcation of the trachea. There was extensive involvement of the lungs and intestines.

5. HEMATOGENOUS INFECTION: This group includes the cases of Cone,[41] Glockner,[38] Mazzotti,[22] V. Schrotter,[58] Staehelin-Burckhardt,[62] and Starck.[55] Frankel's case, sometimes considered to be of hematogenous origin, has been here classified in division III.

The anatomical diagnosis in Cone's case, a negro, aged 33 years, was as follows: "Removal of testicle (for tuberculosis) eighteen months previously: tuberculosis of epididymis and remaining testicle, seminal vesicles and prostate gland; generalized tuberculosis;

chronic tuberculosis of the lungs; peculiar nodular forms of tuberculosis of spleen and kidneys; tuberculosis of adrenal glands; Addison's disease. The esophagus shows in its lower two-thirds elevated dot and larger nodules in great numbers. None of these are caseous, but the smaller points resemble the individual tubercles found in the spleen, liver, and other glands. The elevated dots and nodules found in the lower two-thirds of the esophagus are seen to be enlarged lymph follicles, invaded by miliary tubercles which at times become conglomerated. The mode of infection in this case offers no difficulties; it is really of hematogenous origin, the original focus being the diseased testicle."

This is the only case in which the esophageal foci have been limited to the lymphoid structures, and, as Cone suggests, there is a strong probability of this form being overlooked owing to the insignificance of these structures even when involved in a general tuberculosis. Without thorough microscopic examination such a focus might easily escape discovery.

Glockner describes a case which presumably belongs in this division. The patient, a man 48 years of age, had tuberculosis of both lungs, the pleura, liver, kidneys, spleen, esophagus, and peri-bronchial and mesenteric lymph glands. About the middle of the esophagus was a thickened zone, encircling the tube, which consisted of caseous tubercles which had infiltrated and were limited to the muscular coat. The mucosa and submucosa were normal, and there was no involvement of the peri-esophageal tissues.

Two of Mazzotti's cases can be ascribed to hematogenous infection with a strong show of reason, although the second has usually been credited to infection by the sputum.

This controverted case concerns a woman of 37 years who had tuberculosis of both lungs, ulcers in the intestines, and miliary tubercles in the liver. In the upper part of the esophagus the mucous membrane was considerably thickened and occupied by numerous caseous miliary tubercles. Bacilli were demonstrated.

His first case was a child of 10 years who had died of miliary tuberculosis of the brain, lungs and spleen, following tuberculosis of the bronchial glands. In the course of this general dissemination a miliary outbreak occurred in the esophagus.

V. Schrotter treated a man of 37 years who, eleven years before had contracted syphilis and who for the preceding year had had progressive difficulty in swallowing. Fleeting improvement followed mercurial inunctions and dilatation, but he soon relapsed and died. Examination showed a stenosis of the esophagus 15 cm. below the larynx, due to fibrous masses and nodules in the muscular layer. The peri-esophageal tissue was somewhat thickened but the stenosed section was freely movable. Microscopic examination showed disseminated tubercles in the muscles and granulation tissue in the mucosa. Neither bacilli nor spirochetae were demonstrated. Both lungs were badly involved, and there were ulcerations in the ileum and trachea.

Another undoubted case of this nature is that reported by Staehelin-Burckhardt, a girl of 14 years, who died of tuberculous meningitis. The following is Staehelin-Burckhardt's anatomical diagnosis: "Meningitis tuberculosa. Miliary tuberculosis of the lungs, kidneys, liver, spleen, and thyroid. Chronic tuberculosis of the bronchial glands, the fibula and the tendon sheaths of the right leg. In the esophagus, in the upper third of the anterior wall, a clear-cut ulcer 6 to 10 mm. and 6 to 8 mm. in depth. In the base of the ulcer typical tubercles were found. At one point the process extended through the entire wall of esophagus and into the mucous glands of the trachea, without reaching the tracheal mucosa itself. At different points between the trachea and esophagus were found small masses of lymph-adenoid tissue, in which were typical tubercles."

The final case in this group is that recorded by Starck. A man of 48 years died following amputation of the thigh for "gonitis tuberculosa exsudativa." There was also bilateral apical tuberculosis. Post-mortem: Pleura thickened, adhesions, much liquid; trachea and larynx normal. Peritoneum: numerous nodules; mesenteric glands swollen and caseous; glands around abdominal aorta enlarged and caseous; esophagus adherent to pleura, lungs, pericardium and mediastinal glands; extensive diffuse dilatation, which extends in a funnel-shape towards the cardia, walls thickened; mucosa the seat of many ulcers; numerous tubercles in the muscular coat and the submucosa."

6. TUBERCULOSIS DUE TO CARIES OF THE VERTEBRAE: In this group I have been able to find but seven cases; three recorded by Penzoldt;[15] one by Kauffmann;[53] two by Uhde;[6] and one by Loeschner.[9]

Of Penzoldt's cases one was a man of 36 years, the second a man of 46, and the third a man 53 years of age. The first case had tuberculosis of the lungs and intestines, and caries of the fifth and sixth cervical vertebrae. Kyphosis and scoliosis. The posterior wall of the esophagus, opposite the fifth vertebra, was perforated by an abscess that originated in the diseased vertebrae.

In the second case post-mortem examination showed: "Caries of the first four dorsal vertebrae, with perforation of the abscess into the esophagus. Pachymeningitis on a level with the diseased vertebrae. Recent bilateral pleurisy. Pneumonia of the right upper lobe. Partial collapse of the right lower lobe." A sound, passed from the front through the cavity, entered the spinal canal. The perforation was 1 cm. in diameter. The only symptoms evoked were those dependent upon the disease of the cord.

The third patient had presented the signs of pulmonary phthisis and caries of the upper dorsal vertebrae. While under observation there occurred a sudden expectoration, unattended by cough, of an abundant bloody pus, with severe pain in the throat, dysphagia, chills, and collapse. Digital examination was negative; larynx normal; on the wall of the pharynx, on a level with the apex of the arytenoids, was a tumor-like swelling. Death occurred two days after the onset of these symptoms.

Autopsy: Chronic caseous pneumonia of both apices; caries of the first four dorsal vertebrae with large abscess; kyphosis. A fistula 7 mm. in width, extended from the abscess cavity into the esophagus.

At the point of perforation the esophagus was drawn to the right and fused with a lymph gland and the right half of the first dorsal vertebra. Below the perforation the esophagus had a right-angled kink, corresponding to the kyphosis. A sound passed into the fistula entered the abscess cavity, touched the carious bone, and entered the spinal canal. In none of Penzoldt's cases was there a histological confirmation of the diagnosis.

The case observed by Loeschner was a child in whom the abscess originating in caries of the vertebrae perforated into the esophagus. Ude, in 1856, reported two cases in both of which large abscesses had extended into the posterior mediastinum. In one case the only symptoms were a kyphosis involving the three upper dorsal vertebrae and motor paraparesis. A perforation three-quarters of an inch in diameter, with fibrous walls, extended into the esophagus. The food, both solid and liquid, entered the abscess cavity, except when the head was bent strongly forward, thus forming a fold at the under edge of the fistula.

In the second case there was caries of the dorsal vertebrae from the fourth to the tenth, and the resultant abscess had an opening into the esophagus at the center of the point where the third dorsal almost touched the body of the eighth dorsal. The cavity had suddenly opened, the pus passing through the intestinal tract.

The only other case in this division is Kauffmann's, reported in 1904, in which there was a tuberculous stricture of the esophagus consequent upon caries of the first two dorsal vertebrae. The patient, a man of 64 years, was admitted to the hospital on April 4, suffering with an abscess in the left cervical region, to which was attributed the existing difficulty in deglutition. After incision, a sound introduced into the wound passed into the esophagus. An esophageal sound, passed by the mouth, was arrested 18 cm. from the teeth. There was tuberculosis of both apices, and this condition, together with the character of the abscess, was sufficient to warrant the diagnosis of tuberculous stricture of the esophagus.

The stenosis gradually increased and became impermeable to the sound, and all foods, liquids and solids, escaped by the fistula which opened on the left side of the neck, or was promptly regurgitated. The patient was nourished by intestinal alimentation, and after May 14, through an intestinal opening. He died on June 22.

Autopsy showed advanced caries of the first two dorsal vertebrae, more marked on the lateral aspects of the bodies, leaving the spinal canal intact. The esophagus was stenosed at the superior orifice and distended into a globular shape. There was a cavity in the right apex, but this had no direct relation to the vertebral focus. The stenosis was undoubtedly due to the vertebral caries. There had been no disturbances of sensibility of the upper limbs, nor the slightest pain along the spine.

7. EXTENSION BY CONTINUITY FROM CASEOUS BRONCHIAL GLANDS:

This, by far the most frequent etiological factor, is responsible for the following cases: Bartlett,[42] (2 cases); Weichselbaum,[19] Beck,[17] Pitt,[25] Orth,[28] (two cases); Zenker,[31] (2 cases); Barth,[4] Danel,[39] Mazzotti,[22] Gruenewald,[13] Schilling,[46] (2 cases); Zelenkoff,[20] Letulle,[33] (2 cases), Voelcker,[29] (4 cases), Penrose,[63] Barry,[23] Riviere,[51] (3 cases), Spillman (classified as due to sputal infection), Flexner (classified as due to sputal infection); Polandt,[21] Nowak,[30] Hanot,[27] and Guisez-Abrand.[61] Zerenin's case probably belongs in this group, but owing to some doubt it has been placed in the list of unclassified cases.

In the first of Bartlett's cases the anterior wall of the esophagus had five fistulous openings, communicating with cavities within as many peri-bronchial and posterior mediastinal glands. About the openings, and completely covering the mucosa of the surrounding parts, were numerous ulcers and caseous nodules. There was tuberculosis of the intestines, liver, kidneys and spleen. Bartlett's diagnosis was, "chronic lymphatic tuberculosis with tuberculous pleurisy and secondary general miliary tuberculosis."

His second case was a negro, in whose esophagus was found a single perforation leading into a gland behind the bifurcation of the trachea. There were four small ulcers about the opening of the fistula. There was miliary tuberculosis of the liver, spleen, peritoneum and lungs. In neither of these was there clinical evidence of an esophageal lesion.

A second case in which there were numerous perforations is that of Weichselbaum. Eight fistulae, all located about two inches above the bifurcation of the trachea, communicated with caseous glands. Almost the entire esophagus was studded with nodules. There was pulmonary, intestinal, laryngeal and tracheal tuberculosis, and the cervical and mediastinal glands were caseous.

Beck's case was a man with pyo-pneumothorax, tuberculous meningitis. tuberculosis of the lungs, larynx, bronchial and mediastinal glands, and trachea. In the anterior wall of the esophagus, on a level with the bifurcation of the trachea, was a diverticulum due to traction of adherent caseous glands. Above the diverticulum was a large ulcer surrounded by small nodules. The ulcer corresponded with a softened area in a mass of adherent glands lying between the esophagus and the trachea.

In Pitt's case, and two of Orth's, perforation occurred secondary to adhesions between the esophagus and bronchial glands, in the neighborhood of the bifurcation of the trachea. Zenker's two cases were of a similar nature, but in one the entire tube was the seat of a severe phlegmenous inflammation. Additional cases of the same character are recorded by Barth and Danel, the opening in Danel's case measuring 1 cm.

The cases reported by Mazzotti and Schilling are similar to Beck's; instances of traction diverticula with ulcers about the fistulous openings.

Mazzotti's case was a man of 21 years who had succumbed to pulmonary and intestinal tuberculosis. Two perforations, situated at the junction of the upper and middle third, led into caseous bronchial glands. At the junction of the middle and lower third were two more ulcers, and somewhat lower a third group. The caseous glands also communicated with the left bronchus.

Cases in which infection of the esophagus was a result of perforation of tracheal and peri-bronchial glands are recorded by Gruenewald, Lalague, Meyerhoff and Denonvilliers.

Londe's case was a man of 50, who had died of a hematemesis. There was miliary tuberculosis of the pleura, with caseation of the bronchial glands and their amalgamation with the esophagus. A fisutla, at autopsy still filled with blood, extended from the glands into the esophagus immediately below the bifurcation of the trachea.

Zelenkoff reported a case in which impaired nutrition and death followed gastrostomy. The glands at the root of the right lung were caseous and confluent, forming a mass that surrounded the esophagus and which had ulcerated through its anterior wall. In the glands was a cavity as large as an egg, filled with detritus.

Of the two cases described by Letulle one is quite similar to Londe's case, while doubt attaches as to the tuberculosis nature of the other. In this patient a tuberculous empyema ruptured into the esophagus but this organ did not show any giant cells or tubercle bacilli

Guisez and Abrand observed a man of 37 years, who was markedly emaciated as the result of a long-standing pulmonary phthisis, and who for three months had suffered from dysphagia during the swallowing of solid food. Esophagoscopy showed a pocket-dilatation occupying the upper third of the tube, of from 200 to 250 cm. capacity: 22 cm. from the dental arch was a stenosis admitting only a filiform bougie No 9. The mucosa was blanched and ulcerated, and the walls were infiltrated and immobilized by adhesions to the neighboring tissues.

The patient died one month after examination, and the autopsy showed an esophageal stenosis above the level of the bifurcation of the trachea. This region was entirely surrounded by swollen glands, two of which were the size of a hen's egg, and which had undergone caseation. The anatomical diagnosis was "Case of esophageal tuberculosis through secondary invasion of the walls from tuberculous glands."

Voelcker's first case was a boy of 9 years in whose esophagus there was an opening 5 mm. in diameter, somewhat below the level of the bifurcation of the trachea, which communicated with a cavity filled with caseous material. Abdominal tuberculosis was absent. The three other cases seen by him, the result of 2,504 autopsies upon children, were of a somewhat similar nature. Penrose's case was a baby of 7 month, but proof is lacking as to whether perforation was followed by actual tuberculosis of the esophagus.

Barry observed a case that had run a symptomless course, in which there was an esophageal fistula leading into the trachea. The posterior bronchial glands were caseous, communicating by fistulae with the trachea, bronchus, and the superior vena cava. It was to the hemorrhage occasioned by this last opening that death was due.

Riviere has recorded three cases, but, like so many others in this group, they lack histological confirmation. In two of these cases the gland had completely emptied its caseous contents into the esophagus, and the gland cavities were lined with an apparently healthy mucous membrane.

Additional cases of perforation, without, however, the establishment of actual tuberculous foci in the walls, are reported by Polandt, Nowak and Hanot. In Nowak's case, a woman of 61, there was primary tuberculosis of the bronchial glands, from which fistulae extended into the esophagus, pericardium and trachea. The case of an infant, 18 months old, in whom perforation occurred into the left bronchus, was recorded by Polandt, and Hanot describes the case of a man of 22 years in whom rupture took place into the esophagus and trachea.

In the cases reported by Spillmann and Flexner the infection probably occurred through the sputum, and the perforations took place in the opposite direction from the others here described, that is, the ulcers originated in the esophagus and ruptured outwards. These are the only two cases of this nature.

8. UNCLASSIFIED.

In this group are placed the cases that cannot be definitely ascribed to any one particular channel of infection, i. e., those of Moure and Viel,[59] and Zerenin.[41]

The first is one of the very few cases in which a clinical diagnosis was definitely made, and in which both the subjective and objective symptoms were accurately observed; hence it is deserving of detailed report. A man, 36 years of age, during the course of a meal, suffered from an attack of dysphagia so sudden that he believed it to be due to the swallowing of a foreign body. Following this he was unable to swallow anything but purees and liquids, the latter only when hot. Deglutition was followed by a sensation as of a foreign body in the mid-sternal region, and frequently by regurgitation. Radiography showed only hypertrophy of the tracheal and bronchial glands. An esophageal sound (large) was stopped 34 cm. from the dental arch by spasm of the tube. This soon yielded and allowed free passage. For a few days following he was able to swallow eggs.

Esophagoscopy showed the posterior wall, and in particular, the left antero-lateral wall, occupied by a series of confluent ulcers with irregular borders. The neighboring mucosa was congested and soft and bled easily. This same characteristic was observed by Schrotter, the bleeding in his case being sufficiently profuse to interfere with the examination. The lesions appeared to be superficial and the esophageal wall preserved its suppleness. The lesions extended about 8 cm. and the tube above it did not appear to be dilated. It was evident that the dysphagia was due to the chronic spasm induced by the ulcers. Intestinal obstruction developed and examination showed an irregular mass in the pelvis. Abdominal incision evacuated several liters of fluid and showed generalized tuberculous peritonitis, with nodules filling the small pelvis. Death occurred four months after onset of the subjective symptoms. An autopsy could not be obtained.

Zerenin, under the title "Esophago-cervical abscess of a tuberculous character," described a case that in some respects is similar to that observed by Kauffmann. A woman of 19 years had had, for a year a gradually increasing growth over the thyroid, that had been lanced several times, and which once was the object of an unsuccessful attempt at excision. When first seen by Zerenin there was a swelling, the size of a fist, on the anterior surface of the neck near the thyroid, from which pus oozed through several fistulae. The swelling was hard and adherent to the surrounding tissues. A probe entered to a depth of 2.5 cm. Temperature 37.5° to 38.7°. A month later the cervical glands enlarged and a diagnosis of sarcoma was made.

Removal of the growth was not followed by any improvement in the general condition. Three subsequent operations, with removal of the cervical glands were performed.

Nine months from the time of the first examination an abscess which appeared on the left side of the neck was opened, and shortly afterwards a similar pus cavity on the right side. From the latter food escaped during deglutition, this symptom persisting until death, which occurred three months after the appearance of this symptom.

Microscopic examination of the tissue revealed tubercle bacilli. At autopsy a mass of caseous glands, the size of a fist, was found upon the upper surface of the diaphragm at the base of the right lung. Tubercle bacilli were present.

In a review of these cases certain features assume a prominence that warrant a more detailed attention: (1) The tendency to involvement of the esophagus in cases of chronic lymphatic tuberculosis; (2) the frequency of association of intestinal and esophageal lesions; (3) the insignificance of the subjective symptoms; (4) the diagnostic value of dysphagia and odynophagia of sudden onset; (5) and the role played by tuberculosis in the production of traction diverticula.

1. Chronic lymphatic tuberculosis was present in forty-four of the cases that afterwards developed esopahageal foci, an exceedingly high proportion and one that establishes a direct etiologic relationship. In a majority of the remaining cases mention is not made as to the presence or absence of this condition.

2. In 22 cases there were coincident lesions of the intestines. In view of the ease with which infection can reach the intestines in these cases it is probable that a larger proportion would show this complication, but the authors are usually silent upon this point.

3. The subjective symptoms have usually been so insignificant, if not entirely lacking, that the condition has generally been overlooked. In only a few cases has the existence of an esophageal focus been suspected.

In ten cases in which a stricture was present, due to the drinking of acids, to the presence of malignant growths or the thrush fungus, the tuberculosis occurred in tissues already diseased, and hence no symptoms developed aside from those occasioned by the underlying disease. In such cases a diagnosis is possible only through microscopical examination.

In one case the tuberculosis apparently preceded the cancerous invasion, but no symptoms appeared until the latter disease developed. In the comparatively few cases in which uncomplicated tuberculosis evoked symptoms, they have been largely those of stricture. There are eight such cases, in two of which a clinical diagnosis, arrived at largely through exclusion, was made. Other symptoms rarely noted have been the sudden discharge of bloody pus by the mouth, and in one case by the rectum, following the rupture of abscesses into the esophagus.

4. The only suggestive symptoms are pain and difficulty in swallowing developing during the course of chronic lung and lymph gland tuberculosis, or of caries of the vertebrae. These symptoms, under such conditions, should always direct attention to the esophagus.

The case of Moure is suggestive for in it we have the appearance of acute severe dysphagia, without previous warning, and followed by chronic spasm. A somewhat similar picture was presented by one of the cases observed by Guisez and Abrand, in which the final attack had come on in this way although it had been preceded by several others of a similar nature. In Penzoldt's third case the sudden outpouring of a large quantity of pus in a patient in whom expectoration had always been scanty, accompanied by chills and collapse, was almost diagnostic.

In the ulcerative cases odynophagia is the chief symptom, accompanied by spasmodic contraction. This form is usually productive of a rapidly developing cachexia.

Aside from these few suggestive symptoms, any or all of which might originate in totally different conditions, we have no symptoms of value. By esophagoscopy a diagnosis is occasionally possible. In 1909 Gootstein wrote: "Tuberculosis has not up to this time been observed by the esophagoscope. A certain diagnosis could not be made by the esophagoscope except by a previous biopsy." Since then a few cases have been so observed and diagnosed. The chief characteristics noted, aside from those accompanying tuberculous lesions of other mucous membranes, consisted in the congestion and soft appearance of the mucous membrane, surrounding and including the zone of ulceration, and the tendency of the membranes to bleed.

5. In the entire series there are five cases of traction diverticula. Aside from these there are a considerable number of spurious cases, in which, as a result of fusion with carious glands, the esophageal wall became perforated with discharge of the gland-contents and the formation of a deep pocket. This condition might easily be mistaken for a true traction diverticulum.

These cases of traction diverticula are very instructive, for they show that the fusion and traction of tuberculous glands may be an important etiologic factor in this condition. Diverticula frequently occur on the anterior wall, just below the end of the trachea at the sits of the bifurcation gland. This gland is frequently the seat of tuberculosis, especially in children, and is sometimes the only location, the disease not advancing from this original focus. Therefore, in cases of diverticula, especially of this locality, tuberculosis of the glands must be given consideration.

In 140 autopsies on tuberculous cadavers made at the Henry Phipps Institute, small diverticula extending about 3 mm. in depth, were found in four cases, but the causative pathological condition was not uncovered.

The diagnosis of tuberculosis must be made largely by exclusion, eliminating such diseases as syphilis, cancer, caustics, stenosis through compression, actinomycosis, non-tuberculous diverticula and sporotrichosis. Microscopical examination is usually essential for differentation.

The question of treatment demands but brief consideration. In only a few of the cases described could treatment, had it been instituted, have been of any avail. In the majority the complicating lesions were of so aggravated a nature as to have made any local interference entirely unwarranted.

With the early recognition of the esophageal lesions, however, and their treatment under visual control, there is no apparent reason why the local results should not approximate those attained in the larynx. For stenosis, gradual dilatation, carried out with extreme care, may be tried, and the same treatment should give some relief from the spasms incident to ulceration. The local application of the electric cautery, lactic acid, formalin, orthoform, propesin, etc., with the internal administration of sedatives of the bromid type, will about exhaust our present resources.

Metropolitan Building.

Ozena Problem. Ralph H. Parker, *Jour. of Ophthal. and Oto-Laryngol.*, Jan., 1913.

"Ozena is an inflammation of the nasal *mucus* membrane accompanied by fetor and crust formation and followed by atrophy of the *mucus* membrane. The *mucus* membrane bears much the same relationship to the nasal cavity that the peritoneum does to the abdominal cavity."

[This is not the accepted understanding of the meaning of "ozena." Besides, the peritoneum bears no similiarity whatsoever to the nasal *mucous* membrane. The former being a serous membrane within a closed cavity and with a histology and histo-pathology entirely unlike the nasal mucous membrane.—Reporter.]

Among conditions classified as ozena are: syphilitic lesions, operations upon lower turbinate, operations upon adenoid tissue, nasal gonorrhea and suppurative sinusitis. Stein.

THE OBLITERATION OF THE MASTOID EXCAVATION BY THE IMPLANTATION OF A TISSUE-FLAP TAKEN FROM THE TEMPORAL MUSCLE.*

DR. SAMUEL IGLAUER, CINCINNATI.

The prolonged after-treatment and the uncertain cosmetic results constitute two great drawbacks to the simple mastoid operation as ordinarily performed. Under the accepted method of after-treatment, by packing and granulation, it usually requires weeks and not infrequently months for the mastoid excavation to become obliterated, and this often proves an ordeal for both patient and physician.

From time to time various methods have been proposed to shorten the duration of the after-treatment and to improve the cosmetic results of the simple mastoid operation.

Macewen[1] was the first to suggest that the healing process might be hastened by increasing the exposed surface of the soft parts through the removal of a portion of the posterior meatal wall. Plummer and Germain,[2] and Hopkins[3] advocated a somewhat similar procedure. Kuester[4] reported excellent results from the reposition of an osteo-plastic flap formed from the periosteum and cortex of the mastoid process. Blake,[5] Sprague,[6] Riek[7] and Bryant,[8] and more recently Holmes[9] have enthusiastically advocated the blood-clot dressing; while Low[10] recommended the introduction of animal serum into the mastoid excavation.

According to Barr[11] the closure may be hastened by filling the mastoid gap with a Moorhoff iodoform-wax plug introduced the second week after operation. Beck[12] advocates the use of a bismuth-paste dressing. Leland[13] introduces a large periosteal flap into the mastoid wound in order to close off the aditus and hasten the healing process. Mosher after removing the posterior meatal wall inserts a pedunculated flap formed from the post-auricular soft parts.

In April, 1910, I reported a case illustrating a new operation for the primary closure of the mastoid wound by means of a flap taken from the temporal muscle.[15 16] Dr. Neumann informs me that he has employed a similar plastic for the secondary closure of a persistent retro-auricular fistula, and that mention of this case appears in the Transactions of the Oesterreichische Otologische Gesellschaft, February, 1911.

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*Read at the annual meeting of the American Academy of Ophthalmology and Oto-Laryngology, Niagara Falls, August 22, 1912.

The operation which I have devised consists in the exposure of the posterior portion of the temporal muscle from which a pedunculated flap is formed. This flap is then rotated downward and backward, and is tucked into the mastoid gap, which is thereby completely filled with viable tissue. Drainage is provided by a rubber tube extending from the mastoid antrum to the lower angle ot the mastoid incision.

The close topographical relation of the mastoid process and the temporal muscle together with the abundant blood-supply of the latter render it especially available for a plastic operation of this kind.

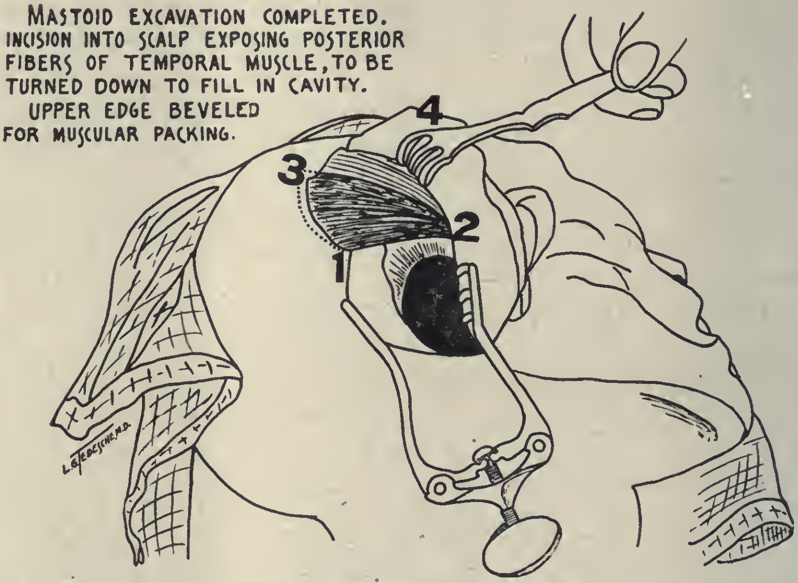
MASTOID EXCAVATION COMPLETED.
INCISION INTO SCALP EXPOSING POSTERIOR FIBERS OF TEMPORAL MUSCLE, TO BE TURNED DOWN TO FILL IN CAVITY.
UPPER EDGE BEVELED FOR MUSCULAR PACKING.
4
3
2
1
L.G.TEDESCHE M.D.

Figure I. Mastoid exenteration completed. Incision carried into scalp, exposing temporal muscle, from which a flap (1, 2, 3) is formed. Scalp (4) drawn forward.

Technic: The scalp is shaven somewhat higher than for the usual operation and the field is sterilized with tincture of iodin. The simple (Schwartze) operation is performed in the usual manner, the mastoid cavity is thoroughly excavated and repeatedly cleansed with sponges saturated with hydrogen peroxid.

The operator now re-sterilizes his hands (fresh gloves), and with instruments not previously used, prolongs the original mastoid incision upward and forward into the hairy scalp. This incision (Figure III) lies immediately anterior to the posterior border of the temporal muscle, is concave forward and about one and a half to two inches in length. The scalp (Figure I.^{4} is now dissected downward and forward exposing the underlying glistening temporal fascia. The posterior portion of the temporal muscle and fascia are now freed from the pericranium and a triangular flap (Figure I.$^{1\ 2\ 3}$) with its apex downward is formed by splitting off the exposed muscle in the line of its fibers, the pedicle being formed of the fibers passing under the zygomatic arch and contains branches of the temporal arteries. The flap is now rotated downward and backward into the mastoid cavity (Figure II,$^{1\ 2\ 3}$). If the temporal ridge be prominent it should be chiselled away with the underlying bone to provide a groove for the pedicle. At times the latter may be too short or too thick but it can readily be elongated by cutting obliquely across some of its anterior fibers. The flap is anchored by a few catgut sutures fastened to the periosteum at the lower angle of the mastoid wound. A small rubber drainage tube is introduced under the flap and extends from the antrum to the lower angle of the incision. A small puncture is now (or previously) made through the scalp immediately over the dead space left

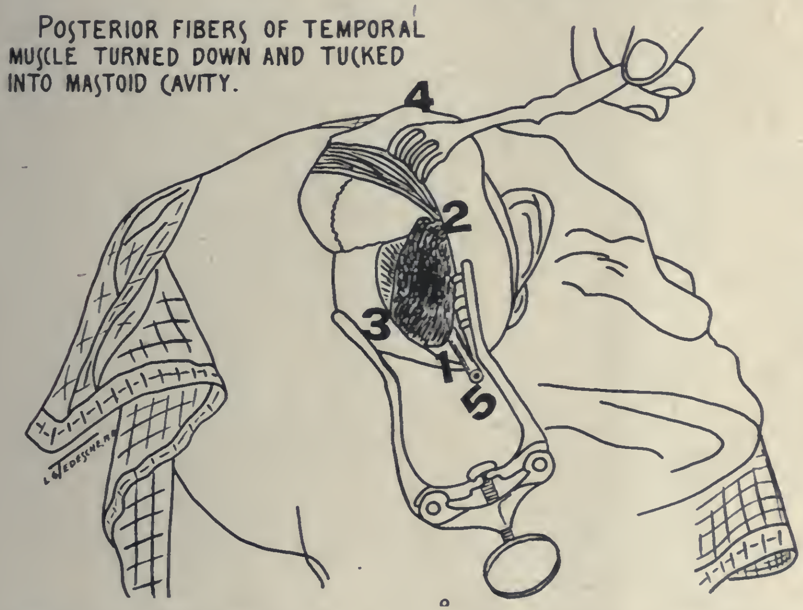
POSTERIOR FIBERS OF TEMPORAL MUSCLE TURNED DOWN AND TUCKED INTO MASTOID CAVITY.
4
2
3
1
5

Figure II. Muscle flap (1, 2, 3) turned downward and backward, and tucked into mastoid cavity. (2) Pedicle of flap. (4) Scalp. (5) Drain.

by the removal of the muscle flap, and a gauze wick is drawn through at this point (Figure III) to provide exit for any blood which may accumulate.

Sutures are now introduced into the scalp incision, the upper strands are knotted but the lower ones are left untied to provide for drainage (of blood). The latter sutures are drawn taut on the first or second day after operation. (Figure III, [1] [2]). The mastoid incision is closed by interrupted sutures.

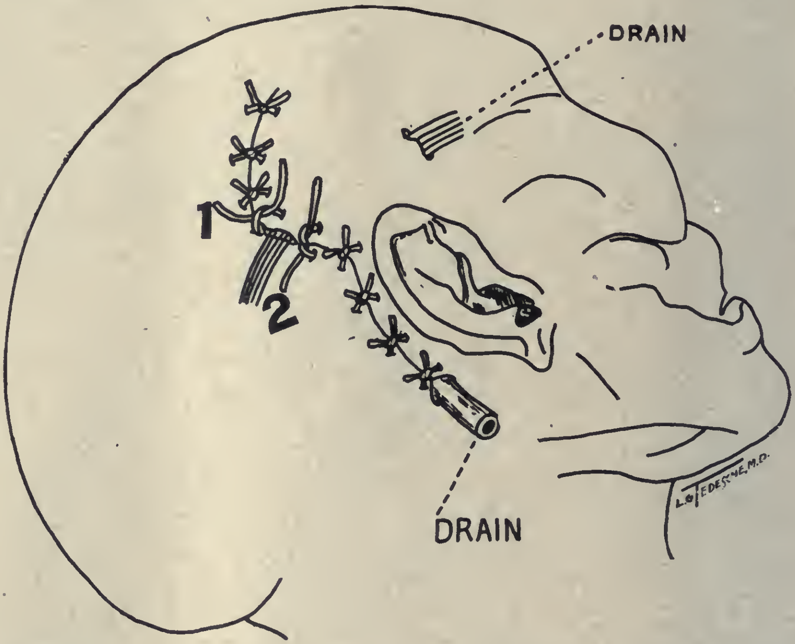

Figure III. Incisions closed. Sutures 1 and 2 left untied. Drains in situ.

Several layers of gauze are packed over the dead space left by the removal of the flap and a very firm pressure-bandage is applied.

The wound should be dressed on the first or second day after the operation and any blood which may have accumulated under the scalp should be expressed. At the same time the drainage tube from the antrum should be removed and a fresh one introduced if necessary.

Results of the Operation: I have now performed this operation upon ten cases, too small a number for statistical purposes. The results of these operations may be summarized as follows: Among the disadvantages of the procedure it should be stated that in several cases difficulty was encountered in the dead space immediately overlying the zygomatic arch, where a hematoma formed and in some instances suppurated. However, this accumulation when present was readily pressed out and the case then proceeded towards recovery. The more recent methods which I have adopted, namely, leaving some of the sutures untied, should in a large measure obviate this difficulty. Transient edema of the forehead and eyelids on the operated side was noted several times and was due either to the formation of a hematoma or the interference with the lymph flow from the affected region.

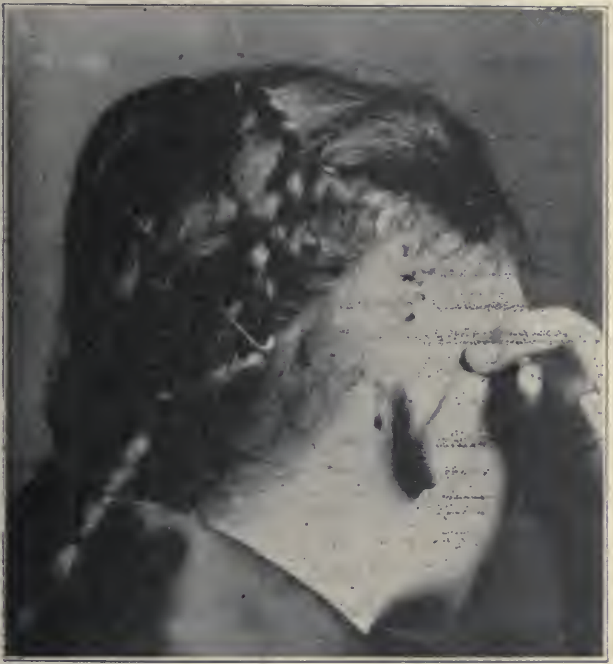

Figure IV. Showing cosmetic result eighteen days after operation. Patient practically recovered although site of emergence of drainage tube is still evident.

Among the advantages of the operation were the following: The transplanted muscle in nearly every case survived and became adherent in its new location and filling out the mastoid excavation. In one case requiring a secondary operation (for causes unrelated to the flap) six months after the transplantation some of the tissue was removed and examined histologically. The report of Dr. Mombach is as follows: "Examination shows a large amount of healthy muscle tissue, the transverse striations which are marked, also a number of transversely cut muscle bundles. In part the section shows muscle undergoing cloudy swelling. Other parts of the section show a considerable amount of fibrous connective tissues. Throughout the section one finds blood-vessels which are intact. In another instance a specimen removed about three weeks after operation from a case in which the wound was of necessity left open because of a torn sigmoid sinus, the flap which had been exposed to the air failed to reveal any intact muscle fibers, but showed connective tissue fibers and round cells infiltration. (Report of Dr. W. E. Lucas).

The incisions, excepting at the points of emergence of drainage tubes, usually closed by primary union. Free drainage from the mastoid wound and antrum took place through the conduit under the transplanted muscle and the discharge usually ceased in about ten days or two weeks. The drainage opening showed but little tendency to close until the discharge had ceased. In some cases the discharge from the auditory canal persisted a few days longer than from the mastoid. (Politzerization hastened resolution in the tympanum.) In from two to four weeks, in most cases, the patients were practically well, that is, the discharge from the wound had ceased, but a few granulating areas in the scalp or mastoid incision remained. These cases demand very little attention and did not require the care of persons especially trained. The cosmetic results (Figure IV) were very good since the extra-incisions in the scalp were concealed by the hair and the mastoid depression was obliterated. The position of the auricle remained excellent and no disturbance in the function of the temporal muscle was noted in any case.

Indications and Contra-Indications: This myoplastic operation may be generally employed for the closure of the simple excavation in uncomplicated cases of mastoiditis. It can, in all probability, be employed in selected radical cases. It is contra-indicated in debilitated persons, in cases of severe infection, and whenever the maintenance of prolonged drainage is especially desired.

Conclusions: 1. The plastic closure of the mastoid gap by the implantation of a portion of the temporal muscle is readily accomplished. 2. Some transient difficulty may be encountered with the dead space under the scalp. 3. Drainage, the prime object of mastoidectomy is provided for, despite the fact that the mastoid excavation is almost completely obliterated by the implanted tissue. 4. The duration and difficulties of the after-treatment are greatly reduced by the implantation operation. 5. The cosmetic results of the operation are very good.

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New Principle in Esophagoscopy and Gastroscopy. Richard Lewisohn. *Ann. of Surg.*, Jan., 1913.

The author considers first the reasons why esophagoscopy is not more generally adopted by surgeons, pointing out the discomforts, difficulties and dangers attendant upon the use of the esophagoscope. The following are the three main requirements of a satisfactory esophagoscope: 1. The introduction must be possible in the manual position of the head. 2. The instrument must be so constructed that it actually passes in the longitudinal axis of the esophagus and not at an angle of this axis. 3. The esophagoscope should only be passed downward along the esophagus under guidance of the eye to avoid perforation.

Based upon these considerations, he has constructed an esophagoscope consisting of two portions,—a horizontal which lies in the mouth of the patient, and a vertical consisting of a telescope composed of six separate tubes which may be pushed down the esophagus. He uses illumination from the proximal ends, and the rays converged down the tube by means of a condenser which concentrates them on a mirror, from which they are thrown on another mirror at the junction of the horizontal and vertical tubes, which throws the rays down the tube. He appends the report of ten cases in which he has used his esophagoscope with excellent results.

Packard.

DECOMPRESSION FOR THE RELIEF OF DISTURBANCES OF THE AUDITORY APPARATUS OF INTRA-CRANIAL ORIGIN.*

DR. WELLS P. EAGLETON, NEWARK, N. J.

The beneficial influence of decompression for the relief of edema of the optic nerve with failing vision, from increased intra-cranial pressure, is now generally recognized.

The exact cause of the papilledema, its early appearance in some cases and its long delay or entire absence in others, is still not completely understood. The length of the optic nerve is favorable to the development of not only a neuritis from direct pressure, but also from an edema of the sheath itself. The latter is bilateral; the former is unilateral. Examination of patients and operative findings by Payton,[1] caused him to regard the late papilledema following brain tumor as due to general cerebral edema. But that there is some other factor than cerebral edema, or edema of the nerve-sheath, is shown by the frequency in which one-sided papilledema is seen in the early stages of brain tumors.

Cushing has demonstrated that many of the palsies, such as those of the third and sixth nerves occurring at a distance from the growth, are due to direct pressure from disturbance of the circulation. That papilledema does occur from direct pressure I observed in a case of a large hemorrhagic pial cyst of the frontal region on which I operated, the cyst having caused a marked homilateral optic neuritis with hemorrhages with but very slight involvement of the opposite.

All opthalmologists have observed patients suffering from marked optic neuritis without any appreciable diminution of the central vision; and this may continue for a long time. One case that I have personally observed has had a duration of over five years without failure of vision, while periods of one or two years are far from infrequent.

That slight pressure, properly applied to unprotected nerve-tracts, may cause temporary suspension of function without any general increase in the intra-cranial pressure is well known. This was exemplified in a case of tempora-sphenoidal glial cyst causing hemianopsia, on which I performed a decompression in two stages Following the first stage before opening the dura the hemianopsia totally disappeared, although this had been known to be present for several months; the amount of pressure thus relieved being necessarily very slight.

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*Read at the meeting of the American Otological Society, Atlantic City. June 11, 1912.

Unfortunately we have not a method whereby we can diagnose a neuritis of the acoustic nerve before great reduction in the hearing occurs, although repeated, careful, functional tests of the cochlear and vestibular apparatus and of the relation of the different functional tests to each other will enable us to do this with more and more assurance in the future.

The dural sheath of the acoustic nerve, unlike the optic nerve-sheath, is very short, but that this space is frequently the seat of purulent effusion in meningitis is a frequent post-mortem observation.

The degree of increased intra-cranial pressure which, with or without the other unknown factors, so frequently produces intense papilledema with subsequent total blindness is manifestly insufficient to cause a similar loss of function of both auditory nerves; as bilateral deafness in cerebellar tumors is very rare. But the acoustic nerves must be subject, in subtentorial growths, to considerable pressure, edema and possibly to neuritis; the same degree of pressure and edema, perhaps, which in the optic nerves would produce an edema discoverable by the ophthalmoscope, but without marked diminution of vision.

Accurate microscopical pathological examinations of the auditory nerve are still so seldom made that an assertion of the frequency of acoustic neuritis is impossible. Again we have little knowledge of the resistance of the acoustic nerve to mechanical pressure. Neuritis from toxic processes is clinically well recognized, and Orr, Rows and Milligan[2] have shown embryologically that there are two points in the nerve especially vulnerable to such invasion.

While the deafness associated with intra-cranial tumor may not be due to a neuritis and edema, still it is conceivable that such edematous pressure combined with other factors, such as slight direct pressure, may cause a suspension of the function of the acoustic nerve at one of its two vulnerable points, enough to produce deafness, the relief of the pressure restoring the hearing. (The first and third cases reported certainly suggest such a view.)

If these contentions are true, then decompression in the early stage should have as beneficial an influence on the aural disturbances as it has on the papilledema; although as far as I am aware this has not previously been undertaken.

CASE OF BRAIN TUMOR ASSOCIATED WITH TOTAL DEAFNESS OF BOTH EARS AND NONEXCITABILITY OF BOTH VESTIBULAR APPARATUS. DECOMPRESSION: TEMPORARY RESTORATION OF HEARING IN ONE EAR, THE VESTIBULAR APPARATUS REMAINING NON-EXCITABLE.

Case 1: Mrs. F. B., age 38, Newark City Hospital, Dr. C. C. Beling's service. Neurological examination by Dr. Beling. Previous history: cancer of the left breast, operated upon. Symptoms: severe pains in head, dizziness, nausea, diplopia. Attacks of "queer feeling" in hands, more in left, goes up to back of head; compelled to lie down and close eyes during attacks. Suddenly, one week ago, paralysis of left side of face and transient paresis of right arm and leg. Mental condition: emotional; suicidal tendency from pain in head; occasionally forgets what is doing and saying; great restlessness. Examination: left-sided facial paralysis; protrudes tongue to left; grip of left hand, less than opposite; right knee-jerk absent; left sluggish; right plantar reflex absent; left Babinski; no ankle clonus. Eyes: double papilledema, pupils equal, react to light and accommodation. Right vision 20-30; left vision counts fingers at three feet. Hearing very poor in left ear; greatly impaired in right ear.

Four months later returned to hospital with intense pain in head, unable to stand unaided. Gait shuffling; staggering, usually towards right. Speech thick, with some slurring. Double facial paralysis, complete of left, partial of right. Patella reflexes absent; Babinski negative on left side; slight on right side. Eyes: left corneal anesthesia; left pupil smaller than right; intense papilledema of both eyes. Left vision nil; right, counts fingers at few feet. For last three weeks totally deaf in both ears.

Operation, October 19, 1911: Double decompression over both sides of cerebellum; removal of bone from mastoid to mastoid, and from above transverse sinus to margin of foramen magnum. Dura not opened. Six weeks after operation, headache and vertigo entirely relieved; gait shuffling but walks around ward. Complains of numbness of thumb and first two fingers of left hand. Left facial paralysis still complete. Right side of face, while unable to close eye, lower part works well. No corneal anesthesia. No sensory disturbance of face. Reflexes of upper extremity present. Patella reflexes can only be produced by reinforcement. Plantar reflexes very sluggish. No Babinski. Papilledema entirely disappeared but optic nerves atrophied. Right vision, counts fingers at two feet. Left, same. Hearing: right ear, three weeks after operation heard loud voices, now ordinary conversational voice heard at distance of four feet. Left ear entirely deaf. Vestibular appartus. No spontaneous nystagmus. Peculiar horizontal oscillation of eyeballs. Rather jerky action in moving eyes in different directions. Rotation, galvanic and caloric (cold) tests, the latter applied in both ears separately and combined, all fail to produce any nystagmus or to cause sensation of dizziness.

Later history: After several months of freedom from general symptoms of increased intra-cranial pressure, during which patient exhibited a tendency to over-jocularity; gradual return of headaches; anesthesia and later ulceration of left cornea; gradual reduction of vision and hearing. Now, eight months after operation, left eye totally blind; right, perception of objects; total deafness of both ears.

The important fact in this case was that, with total deafness of both ears, the removal of pressure by decompression was followed by the restoration of the hearing of one ear to conversational voice at four feet, although the caloric, galvanic and rotary tests still failed to reveal any excitability of the vestibular apparatus.

While a positive diagnosis of the site of the lesion is perhaps unwise, both Dr. Beling and myself are inclined to regard the patient as suffering from an infiltrating pontine cerebellar angle tumor, with occasional hemorrhage into its substance. Hemorrhage would account for the sudden paralysis of the face with transient paresis of the opposite arm and leg, although this might be due to a transient circulatory disturbance, such disturbances being, we are convinced from autopsy findings in cases which had previously been examined clinically, far more frequent than is generally recognized.

CASE OF PROBABLE TUMOR OF THE ACOUSTIC NERVE-SHEATH; DECOMPRESSION; TEMPORARY DISAPPEARANCE OF ALL RETRO-LABYRINTHINE VESTIBULAR SYMPTOMS.

Case 2: G. M., aged 28. Newark City Hospital, Dr. C. C. Beling's Service. Neurological examinations by Dr. Beling. History: No previous illness. First noticed that could not hear well with left ear and for past two years total deafness of left ear. For past two years occasional "shooting pains" in arms, legs and face. During past six months "pains" very frequent, especially of left side of face, flank, and abdomen; constant tinnitus; severe headaches; vertigo; sensation of rotation towards left. At present vertigo so severe that cannot walk without assistance, always falls towards left. Pains in left ear, face and abdomen have recently become cramp-like and almost constant. Has not eaten food for several days. Nausea but no vomiting. Is afraid to sleep as fears will die. Slight tinnitus in right ear.

Examination. Facial expression drawn and anxious, fine facial tremor, no facial paralysis, hyperesthesia of left side of face, taste of left side of tongue lost, does not recognize salt or sugar; right side normal. Cramp in left masseter on opening mouth widely. Tongue is protruded in median line. Tremor of both legs and arms. Fine tremor of right upper extremity. Attempt to grasp object with left hand evokes awkward movements, resembling athetoid movements; on being handed a dynamometer, makes peculiar movements, beginning in the little finger and extending in a rhythmical manner through fingers, wrist and forearm. The motions resemble those normally performed by the fingers, wrist and forearm in screwing, with the fingers and ball of the thumb, from left to right, a round-headed valve, placed with its top looking downwards. Left arm, pronation and supernatation rapidly continued, produces retardation and awkwardness of left hand, (diadococinesis). Dynamometer: L., 85-94-78-106; R., 78-18-90-100. Reflexes: Knee jerks normal; abdominal reflexes normal; no Babinski; no ankle clonus; no Oppenheim.

Eyes: slight paresis of left external rectus; marked spontaneous horizontal nystagmus on looking towards left; very slight rotary and horizontal nystagmus, on looking to right: both pupils react to light and accommodation; right pupil at times slightly eccentric, and larger than left (spasticity of left); left corneal sensibility markedly less than right; both fundi normal.

Hearing: left, total deafness; right, for conversational voice apparently normal. Vestibular reactions; left ear caloric (cold), followed by marked nystagmus in all directions. (Left vestibular apparatus is hyperesthetic.) During induced nystagmus still falls to left, in all positions of head. Right ear: Caloric reaction (cold) causes no alteration in spontaneous nystagmus. (Right vestibular apparatus not excitable to cold).

Operation, April 29, 1911: Decompression over both sides of cerebellum. Following operation marked and rapid improvement in all symptoms. Four months after operation: no headaches, no dizziness, walks and works perfectly well. Can stand with eyes closed and feet together but when does so has sensation of falling towards left. No diadococinesis or disturbance of co-ordination of left upper extremity. No corneal anesthesia; very slight nystagmus on looking towards left, which latter also still causes some mental confusion from the paresis of the left sixth. Right pupil still slightly larger than left. Patient apparently hears ordinary voices with left ear at distance of two feet. (This may not have been the fact, as patient was not tested with a "noise" apparatus). Tinnitus in left ear still present but slight, and entirely relieved by lying on left side. No tinnitus of right.

Nine months after operation; gradual return of nystagmus, and diadococinesis of left arm, but no headache or vertigo.

Present condition, fifteen months after operation; diadococinesis, and inco-ordination of left upper extremity; if directed to point has an oscillatory, horizontal movement and then suddenly shoots arm forward. Slight contraction of color field of left eye, no interlacing. Long, slow, horizontal nystagmus on looking toward left; short, quick, rotary nystagmus on looking towards right. Rotation causes a momentary increase of the nystagmus away from lesion and adds rotary element to horizontal nystagmus towards lesion. Rotation causes no dizziness. Caloric (cold) reaction negative in both ears; although it is possible that when applied to the right ear it may at times momentarily lessen the horizontal nystagmus towards the lesion and quicken the rotary nystagmus away from the lesion, (paradoxical reaction). Galvanic tests have no influence whatever.

The importance of this case lies in the undoubted influence of the decompression on the nystagmus. For several months the patient apparently heard with the affected ear, but I have so frequently been mistaken in this that not having properly tested him with the "noise" apparatus, I am unwilling to state such to be the fact.

The patient is probably suffering from a tumor beginning in the auditory nerve-sheath and gradually pressing on the cerebellum, as is shown by the early appearance of the deafness followed later by fifth, sixth, seventh and ninth nerve involvement and then typical diadococinesis and inco-ordination of the upper extremity of the same side; the latter being typical of cerebellar involvement, as there is no accompanying reflex disturbance, no Babinski and the dynamometer records are practically of equal strength in both arms

CASE OF INCREASED INTRA-CRANIAL PRESSURE OF UNKNOWN ORIGIN, PROBABLY TUMOR OF THE CEREBELLUM, PRESENTING: VERTIGO—SENSATION OF PRESSURE ON THE TOP OF HEAD—CONTRACTED AND INTERLACING COLOR FIELDS—CEREBRO-SPINAL FLUID UNDER PRESSURE; WITH WHICH WAS ASSOCIATED: PROGRESSIVE DEAFNESS ENDING IN TOTAL DEAFNESS IN LEFT EAR, AND BEGINNING DEAFESS IN THE RIGHT EAR. DECOMPRESSION: FOLLOWED BY ENTIRE RELIEF OF ALL GENERAL SYMPTOMS, WITH PARTIAL RESTORATION OF HEARING IN LEFT EAR AND COMPLETE RESTORATION IN RIGHT EAR.

Case 3: J. J. H., Fireman. Patient of Dr. H. Hart, first seen September 19, 1911. History. Tubercular family history. About three years previously had attacks of dizziness slight in degree. During last few months "dizzy attacks" have become so severe that is unable to attend to duties; attacks come on chiefly after eating. Sudden movement of head in any direction causes "blur" before eyes, accompanied by momentary sensation of confusion; moving objects, cars, smoke, etc., cause same sensation. Constant pressure on top of head; not a pain but a sensation of weight, more severe at times than at others. For past few months constant tinnitus with deafness of right ear.

Examination: B. $P._{120}$ mm. Urine negative. Temperature normal. Neurological examination negative, (Dr. C. C. Beling). Positive von Pirquet's tuberculin reaction. Suspicion of Stellwag's symptoms in both eyes; looking directly at object causes a contraction of the levator palpebra superioris, showing a line of sclera above cornea. Vision normal. Fundi normal, but contraction of the color fields with "interlacing" of colors. Right ear: Whisper heard at one inch; voice at two feet. C_{128} a. c. not heard; b. c. normal. C_{512} a. c. not heard; b. c. reduced two seconds. C_{2048} a. c. reduced eight seconds. Left ear whisper heard at four feet. Vestibular apparatus; Right ear; caloric (cold) no reaction. Rotation towards left, nystagmus twenty-four seconds in duration. Rotation towards right, nystagmus twenty-five seconds duration. Rotation in either direction produces but a momentary sensation of dizziness.

February 12, 1912, (five months later): In spite of treatment, patient has become progressively deafer, at times hearing much better than at others. Right C_{128} a. c. not heard; C_{1024} a. c., heard, but very much diminished. Koenig's rods heard up to 20,000 v. s. Closure of poor ear does not cause increase of sound of tuning-fork held on vertex. Vestibular apparatus: Both ears; caloric (cold) gives no reaction or vertiginous sensation. Following double caloric tilting head forward and away from affected side makes patient dizzy with some nausea. After double caloric test left pupil larger than right; both rather dilated, pupil apparently made larger by lying down.

February 20, 1912: Lumbar puncture performed, fluid under great tension, about 20 ccm. withdrawn. Examination of fluid by Dr. Harrison S. Martland: "Quality clear, no flocculi. Noguchi's globulin reaction and Kaplan's modification of the butyric acid reaction; no increase in globulin. Microscopic examination: scanty number of lymphocytes, no tubercle, no other bacteria. Conclusion: normal cerebro-spinal fluid." Following the lumbar puncture no relief of aural symptoms.

February 28, 1912 (one week later): Right ear with noise apparatus; voice heard at one foot; C_{128} a. c. not heard; b. c. greatly reduced; C_{512} a. c. not heard; b. c. reduced thirteen seconds; C_{2048} a. c. not heard. Left ear, whisper six inches, voice five feet. C_{128}a. c.>b. c.; a. c. reduced nine seconds, C_{2048} a. c. reduced six seconds. Vestibular apparatus: caloric test (cold) in either ear, no reaction. Caloric (double) nystagmus of momentary duration immediately after water stopped, probably comes from left vestibular apparatus, not associated with any vertiginous sensation.

March 23, 1912: Total deafness of right ear. Vestibular apparatus; cold and galvanic tests fail to give reaction in either ear.

April 20, 1912: Operation: cerebellum over right side exposed, dura not exposed.

June 6, 1912: Since operation absolute relief of all vertiginous symptoms. No pressure sensation on top of head. No blur before eyes on movement of head. Patient regards himself as perfectly well. Examination. Color fields of both eyes which had repeatedly been taken and prior to operation always found greatly contracted, with "interlacing," now normal of left eye, slight contraction of right; no color interlacing. Right ear; with noise apparatus, whisper heard at one foot, voice three feet. C_{128} b. c.>a. c.; a. c. reduced eight seconds. C_{512} b. c.>a. c.; b. c. reduced six seconds; C_{2048} a. c. reduced four seconds. Left ear: voice ten feet; C_{128} a. c.>b. c.; a. c. reduced two seconds; C_{512} a. c.>b. c.; b. c. reduced six seconds; C_{2048} a. c. reduced three seconds. Vestibular apparatus: rotation towards left, nystagmus twenty-four seconds; caloric (cold) right ear no nystagmus.

The three cases, taken together, demonstrate many points of differential diagnosis between labyrinthine and retro-labyrinthine lesions.

In G. M., the long continued, spontaneous, horizontal nystagmus towards the affected side suggested intra-cranial origin. With this he invariably fell in the same direction, and this in all positions of the head. The diagnostic value of this absence of the normal relation between the direction of the falling, the direction of the nystagmus, and the position of the head in intra-cranial lesions has been fully demonstrated by Bárány.

F. B. presented "disassociation" of the vestibular and cochlear portions of the nerve. After the decompression, while the cochlear portion of the nerve was functionating, shown by her ability to hear, the vestibular apparatus was not excitable by any known method.

The importance of "disassociation" in the diagnosis of retrolabyrinthine affections, was described by Whitmaack and Frey. While several cases of disassociation from toxic affections of the nerve have been reported, as far as I am aware no case has been previously recorded of "disassociation" having been caused by restoration of the cochlear functions, alone by operation.

G. M. and J. J. H. had the great dissimilarity between the degree of the vertigo complained of and that produceable by artificial stimulation of the vestibular apparatus, to which Bárány has called attention. J. J. H., in particular, was subject to "dizzy attacks" severe enough to incapacitate him; but turning produced practically no dizziness.

Both G. M. and J. J. H. presented a condition, viz.: reduced reactionability to cold and to the galvanic current of the vestibular apparatus of the apparently unaffected side, the presence of which, in intra-cranial lesions, has not, as far as I know, been previously described. This condition, if generally present, may be of service in diagnosing increased intra-cranial pressure involving the auditory apparatus, possibly at an early stage.

G. M., when first seen had, I thought, a hyperesthesia of the vestibular apparatus of the affected side, as cold water syringed into the affected ear had a marked effect, but even at this stage it was impossible to produce any reaction by cold water when applied to the unaffected ear. Later neither cold nor galvanic current produced any effect. In J. J. H. it was impossible at any stage to cause any reaction by either cold or the galvanic methods applied to either ear, although double caloric at times apparently had a momentary effect.

Both G. M. and J. J. H. reacted to turning during the entire course of the disease. In G. M., turning, in the early stages, produced a nystagmus of unusual strength and duration. Later, the nystagmus was very slight, exemplifying the early hyperesthesic and later diminished excitability described by Neumann as occurring in different stages of intra-cranial lesions involving the vestibular apparatus. In J. J. H., turning in either direction produced nystagmus of rather short but equal duration.

Reduced excitability to cold and to the galvanic current, of the apparently unaffected side, associated with induced nystagmus of equal duration from turning, in an intra-cranial lesion, although apparently paradoxical, is logically to be expected from the known, secondary reactions occurring months after the total destruction of the peripheral organ by disease. While the immediate effect of destruction of the labyrinth is to cause a great difference in the duration of the induced nystagmus to turning in different directions, months later, it is found that the duration has become equal. On this fact Ruttin diagnosed a very old, total destruction of one labyrinth. Operation confirmed this. In the same class of cases, reduced excitability of the normal labyrinth to cold is recorded by Bárány. Reduced excitability of the unaffected side to cold, and equal duration of the induced nystagmus from turning, can then be regarded as manifestations of the end result of the central mechanism in its re-establishment of the disturbed compensation following destruction of one peripheral organ. Logically, the same should be much earlier expected in a slowly growing lesion of one side of the central mechanism itself.

As with the vestibular apparatus, so also with the cochlear apparatus, careful examination in the case of J. J. H. revealed a beginning deafness of the apparently unaffected side, although he did not complain of such and apparently was unaware of its presence.

The study of these three cases leads me to believe that in intracranial lesions of the posterior fossa, there may occur early reductions of the excitability of the vestibular apparatus, not only of the affected but of the unaffected side and perhaps an oscillation of the function of the cochlear apparatus of the unaffected side; all due possibly to an edema of the nerve-sheath, which conditions may be revealed by repeated, careful examinations by qualitative tests and can be relieved, at least temporarily, by decompression.

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15 Lombardy Street.

RESONATORS, WITH SPECIAL REFERENCE TO THE SCHAEFER APPARATUS.*

DR. ROBERT SONNENSCHEIN, CHICAGO.

Often new methods and appliances are perfected and employed in one part of the world but for some reason or other the knowledge thereof is not rapidly disseminated, either: (1) because the original articles are published in obscure or foreign journals; (2) because if of the latter class, they may not have been translated into English, and are, therefore, inaccessible to many readers; and lastly (3) because the papers are often not abstracted in our journals. When this appears to be the case it seems not only proper but advisable to call attention to such publication or invention.

So far as I am aware, no article in English has, at least up to 1912, appeared dealing with the apparatus in question, nor have I learned at the time of this writing of the presence of another set of the Schaefer resonators in Chicago. Please pardon, therefore, the introduction of the subject, even though the practical utility of the instrument may not yet have been fully demonstrated nor appear at first sight very great.

To properly appreciate and intelligently apply a subject like otology, and particularly the functional testing of the ear, requires, it would seem, some knowledge of acoustics which embraces among other topics, the subject about to be discussed.

In the consideration and application of resonance and resonators, we have a most interesting and important field bearing on the appreciation of many phenomena connected with hearing and with the voice, besides offering those who are concerned with the study of acoustics per se a splendid opportunity of solving many different questions. Resonators have been used in various ways, for instance: by Helmholtz and others for the analysis of tones, particularly of the different vowels; by Wien for the determination of tone intensities; by Abraham and Schaefer for the purpose of solving the difficult problem of "interference tones"; by Schaefer and later by Waetzmann to furnish proof of the existence of objective physical combination-tones in the sounds produced by vibration of membranes or diaphragms. It seems that a useful application of resonators would consist in testing therewith the various forks which we buy in order to be certain of their pitch should any doubt exist and no other accurate forks be at hand with which to compare. A few years ago Edelmann constructed and introduced a continuous series of resonators evidently intended to supplement the Bezold tuning forks. This will perhaps lead to the former becoming a part of the otologist's armamentarium.

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*Read at the meeting of the Chicago Laryngological and Otological Society, November 19, 1912.

Resonators, be it said, are instruments capable of and used for selecting out special sounds for reinforcement. Resonance, or sympathetic vibration, which is the reinforcement or intensification of sound due to the union of direct and reflected waves, depends upon the principle that a number of slight impulses properly applied will finally create a considerable momentum, as seen in the well-known fact of giving impulse to a swing or a pendulum at the proper phase of the oscillation. When, therefore, a vibrating body is brought near the corresponding resonator the latter is caused to vibrate in its fundamental tone. To induce a rigid body like a tuning-fork to respond to or resonate with another fork, or other sounding body, requires that both objects have exactly the same number of vibrations per second, or that the vibration number of one is a simple multiple of the other. When, however, a more elastic substance such as a column of water or air is used as a resonator, the two sounds need not be absolutely in unison, but should be nearly so. In most resonators a column of air is employed, as is also the case in the Schaefer apparatus. Although in my possession for the past year, it was for certain reasons impossible to do more than use the apparatus on a few patients and attempt some tuning-fork tests, not enough in number or of sufficient quality to signify anything. Further investigation will be made and the findings reported if possible.

To produce a resonator for any one tone is a comparatively simple procedure. A lamp chimney, a tube of cardboard or a bottle may do. By placing in water a cylindrical glass or metal tube open at both ends, and having a length of approximately a meter, and a diameter of a few centimeters, it can be made to resonate for tones ranging from about 100 to 3000 vibrations per second depending upon the depth of the immersion. The disadvantage, however, of these water resonators lies in the fact that the ear of the person to be examined cannot easily be connected with the node of the air wave which is formed at the surface of the water column. For this purpose the spherical resonators of Helmholtz are very serviceable in that they have opposite the sound opening a small funnel-shaped open tip or prolongation which can easily be inserted into the ear.

If it is desired to pick out a certain tone from a sound-complex, the larger opening of one of these Helmholtz resonators need only be directed toward the source of the sound, and the corresponding tone will be distinctly heard. If the sound is not especially loud, alternate covering and uncovering of the smaller opening by means of the finger will often accentuate it, by producing a rhythmic increase and diminution of its intensity. This is due to the fact that a resonator open at both ends reinforces better a higher tone than one open only at one end. In other words, resonators of this type are of higher pitch than those in which one end is closed. On the other hand a resonator is of deeper pitch: (1) the larger the air containing area, and (2) the narrower the sound opening (Schalloch) happens to be.

Schaefer advises using resonators in this analysis of sound without insertion into the ear because the instruments are caused to vibrate by very slight disturbances, such as faint noises or sounds. The fundamental tone of the respective resonator is thus produced, giving confusing results. But this very sensitiveness of resonators can be utilized in otology, for the introduction of the apparatus into the ear will serve as a last resort in the hearing of an otherwise inappreciable sound. Therefore, perhaps, the diagnosis of total deafness should not be made until a fairly loud sound intensified by the corresponding resonator fails of perception.

Tones of medium pitch are the ones most intensely reinforced, the very low and the very high ones much less so. Schaefer, Koenig and Helmholtz maintain that there is no practical value in producing resonators with less than a hundred double vibrations, that is about A (108 v. d.). It is possible to produce resonators for sounds of 2000 to even 4800, (dis^5) vibrations, but practically this fact is not very important. Helmholtz used his spherical resonators up to d^3 (about 1150 v. d.) and claimed that "smaller spheres were not feasible."

Each Koenig or Helmholtz spherical resonator gives a maximum reinforcement for one certain tone, but less for sounds just above or below this one. There are therefore certain tones lying between succeeding resonators which are not reinforced to their maximum. For instance in the Koenig series of nineteen spherical resonators (not to be confused with his series of fourteen cylindrical tubes), there are sixty-four vibrations between the reinforcement maxima of the various resonators, so that each one must not only give the greatest resonance for its own tone but also serve for sounds thirty-two vibrations above or below this. In the small and in the one-lined octaves, however, they do this rather defectively; an important fact to be considered when good reinforcement of all tones is desired.

If a separate resonator were desired for each tone or half tone between c (128 v. d.) and c^3 (1024 v. d.) it would require a large number of instruments, which is impossible from a practical standpoint.

Schaefer claims that the ideal instrument is a "continuous or universal resonator apparatus, adjustable for any desired tone between at least c (128 v. d.) and c^3 (1024 v. d.), one producing maximum reinforcement of every tone, easily manipulated, compact, and comparatively cheap." These qualities are held to be embodied in his new apparatus.

These resonators are four in number of different lengths but the same diameter, cylindrical in shape, and made of brass. One end is open, the other closed by a plate having a central aperture. Over the latter is a conical extension intended to be placed in the meatus auditorius or to be connected with tubing for introduction into the ear. For occluding the small opening when the resonators are not to be inserted in the ear, rubber plugs are provided.

Each resonator tube fits accurately into another cylinder but can be moved in and out. The inner tube is graduated in millimeters, so that the length of the resonators, depending on the amount that the inner tube is withdrawn, can at a glance be read. At the same time the tones for which the resonator acts at different lengths are indicated by letters giving the notes of the scale. As is customary in Germany, H is used to designate the b of our scales. The resonators are graduated to correspond to the tones of the temperate scale, based on the tone of a^1 (435 v. d.) at a temperature of 18° C. (about 64.4° F.). Experiments have shown, however, that at ordinary room-temperature varying somewhat from 18° C., no correction in readings is necessary. The range of these resonators is from about A (108 v. d.) to a little above c^3 (1024 v. d.).

The graduation is also based on the assumption that the smaller opening is closed when the resonators are used. When applied in the ear, the drum acts as obturator, but when used outside the ear the smaller aperture should be occluded with a rubber plug or end of a finger. Otherwise inaccurate results will be had, for a resonator open at both ends is of higher pitch than one in which only a single end is open, as was previously pointed out. Judging by a few experiments this difference in pitch amounts in most cases to about one-half of a tone. It has been shown that the freely movable membrana tympani acts just as well in closing one end of the resonator as does the rubber plug. It will be interesting to see what effect the presence of a perforation in the drum membrane has as regards the pitch of the resonator used.

Comparing now the Schaefer apparatus with those of others, we find that Koenig's set of fourteen cylindrical tubes covers a wide range from G to e^3 but is very expensive and rather bulky. Edelmann's new resonators consist of five spheres each supplied with twelve to eighteen diaphragms, has a wide range, but is also rather expensive. Schaefer's set, as above stated, covers a range great enough for all practical purposes, is accurate, quite compact, easily adjusted, and much lower in price.

There has been considerable dispute regarding the advantage of spherical over cylindrical resonators; Helmholtz supported by Watson and others claiming that the former give a purer tone and a more powerful resonance. Schaefer on the other hand disputes this statement, and claims that even granting it the difference is so slight as not to count from a practical standpoint.

In conclusion be it said that resonators can be used for various purposes: (1) In physical research in the analysis of tones, etc.; (2) in testing tuning forks to see if the actual tone is the one claimed to be present; (3) for determining the pitch of unmarked forks, or that of any other sounding body whose tone comes within the range of the resonators employed; (4) and last, but not least, for testing the absolute duration of hearing. With the corresponding resonator inserted in the ear, a tuning fork, no longer heard alone, will still be appreciated; but when its sound ceases to be heard despite reinforcement, the limit of hearing has been reached. To determine actual deafness forks not at all heard alone can thus be used with resonators to establish the diagnosis.

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29 East Madison Street.

SOME ORIGINAL ENDOSCOPIC METHODS.*

DR. RICHARD H. JOHNSTON, BALTIMORE.

During the past few years so many papers have appeared on direct laryngoscopy, bronchoscopy and esophagoscopy, that it seems almost superfluous to add another to the list. The constant introduction of new instruments, however, indicates that laryngologists are still seeking simpler methods which will enable them to work successfully in these fields. To try to help in the simplification of the work and to add my experiences to the rapidly growing literature are my excuses for submitting this paper to the American Laryngological, Rhinological and Otological Society. By way of preface I wish to say that to learn direct laryngoscopy, bronchoscopy and esophagoscopy well is one of the most difficult problems in surgery; that, once mastered, they are fairly easy and can be successfully used in practically every patient free from deformity.

In order to become skillful much practice is required, which necessitates connection with a large general or special hospital where material can be obtained in abundance. Many hours must be spent in learning proper methods of anesthetizing and in manipulating the various instruments. After long practice a certain knack of handling the instruments, so as not to cause pain, is acquired. It seems to me that the real reason of the want of popularity of these methods is the multiplicity of instruments. When one enters a modern instrument-store and sees the large number of instruments apparently required for the work, one is discouraged to say the least. As a matter of fact successful work can be done with a few instruments.

It may be said, as a general rule, that one who has mastered direct laryngoscopy will have little trouble in passing the bronchoscope or the esophagoscope. When the laryngologist has become expert in the use of the tubes, he will discard the indirect method for operative procedures. The fact that he sees the lesion directly, that with practice he acquires a proper perspective, gives him an advantage over the mirror. Since perfecting my own methods I have not used the mirror for any operative procedure in the larynx. I feel that I can do better and quicker work and that lesions difficult or impossible of removal by the mirror can be successfully handled through the tube.

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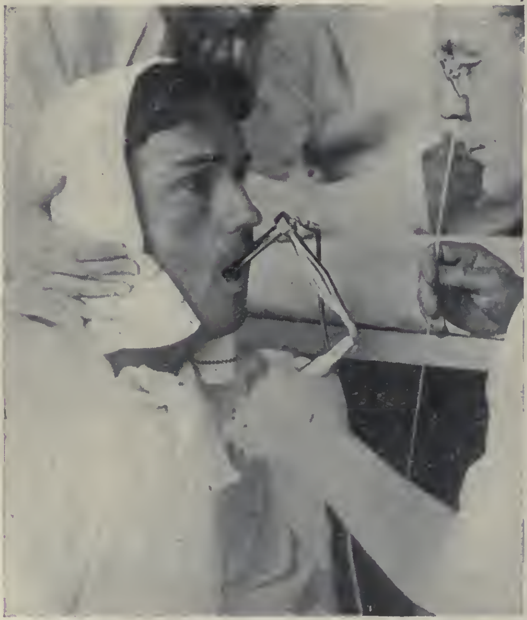
*Presented as a candidate's thesis to the American Laryngological, Rhinological and Otological Society, May, 1912.

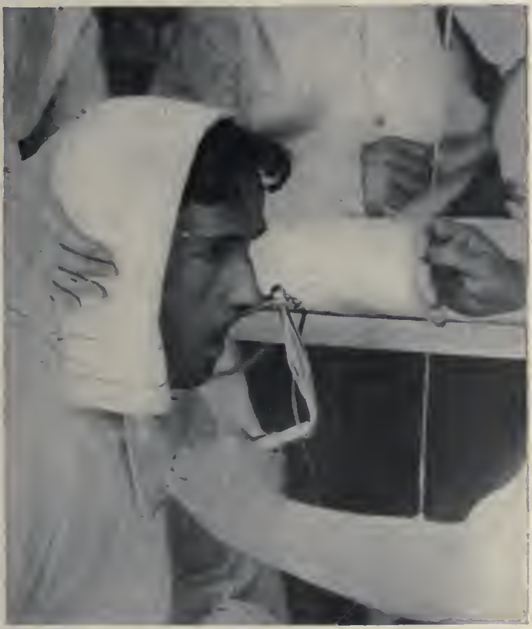
Before describing the methods which have greatly simplified direct laryngoscopy for me, I wish to refer briefly to two positions of the head which have had their origin in America. The "Boyce position" was worked out by Dr. J. W. Boyce of Pittsburg and is fully described in Jackson's work on "Tracheo-bronchoscopy." The head is lowered over the end of the table and held in the proper position by an assistant. Jackson emphasizes the fact that the head must be held just right, which necessitates a trained assistant. Such a man can be obtained where one works constantly in the same hospital, but if he should be so situated that he could not get his assistant, he would be at a great disadvantage. When the "Boyce position" is used, the operator sits on a low stool in a more or less cramped position and is dependent on the man who holds the head. The speculum is introduced with the left hand and when the epiglottis comes into view, it and the base of the tongue are pulled up and a view of the larynx obtained.



1. Direct Laryngoscopy. Head straight. Local anesthesia.

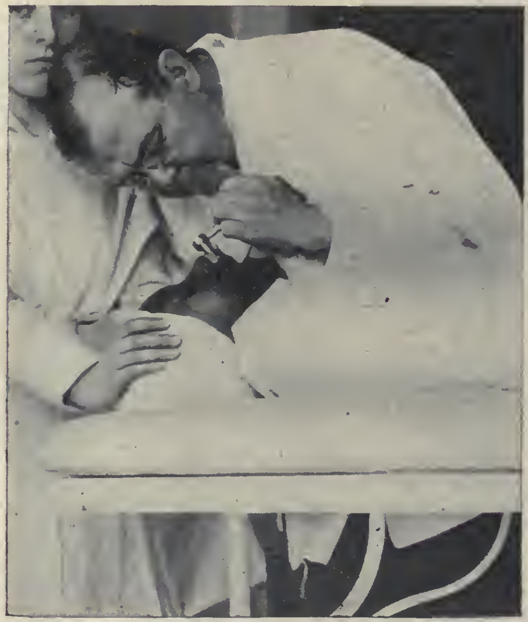
The strain on the forearm in holding the speculum is so great that the instrument cannot long be held in position and one must operate quickly, which endangers the integrity of normal tissues.

In April, 1908, Mosher described the "left lateral route," which consisted in turning the patient's head to the left until the cheek almost touched the plane of the table and then flexing the head on the chest. A special spatula was passed down between the left bicuspid teeth, the tongue pushed to the side and the epiglottis raised, which gave a good view of the larynx. I believe this method was used first in examining the upper end of the esophagus and was later applied to the larynx. Mosher's first instruments were too large and cumbersome for use in every case. He has since had them made smaller.



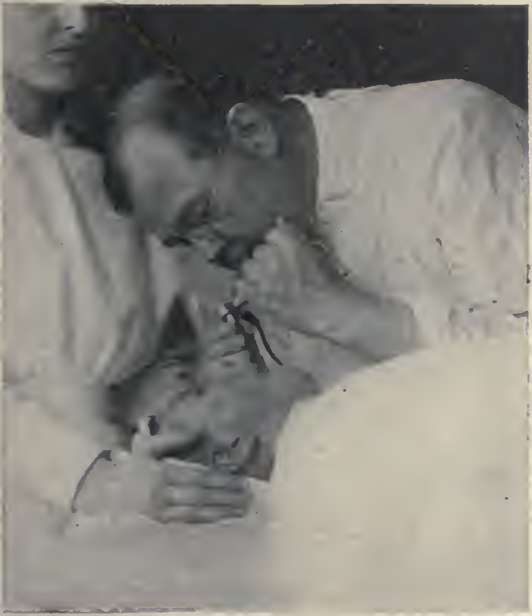
2. Direct Laryngoscopy. Head forward, giving as good a view as Figure 1.

In the summer of 1908 I had under treatment multiple papillomata of the larynx in a child, 4 years of age. I had made the diagnosis with the head in the "Boyce position," but had not been able to do much in an operative way. I tried Mosher's method, unsuccessfully. I then conceived the idea of passing the old Jackson speculum between the incisor teeth with the head straight on the table. A good view of the larynx was obtained. Since then I have used no other method in the examination and treatment of the larynx in children and in adults under general anesthesia. Before describing the straight method as opposed to extension and flexion, it will perhaps be better to mention direct laryngoscopy in the sitting position. From an extensive experience with the position that I will describe, I believe it is possible to examine practically all adults under local anesthesia. If the patient has a sensitive throat or seems at all nervous, I make it a rule to give two or three days before the examination large doses of bromides which do good in controlling the cough-reflex and in allaying nervousness. On the day of the examination the patient is instructed to eat a good lunch, since a full stomach seems to have some effect in preventing poisonous symptoms from the anesthetic, and to report at the hospital at a certain hour. A half hour before the examination the nurse gives the patient a hypodermic injection of morphin (1/8 to 1/4 gr.) and atropin 1/150 gr.). The patient is seated on a low stool with the head slightly extended and supported—not held—by a nurse. Formerly I used cocain for anesthetizing, but two cases of rather serious poisoning led me to substitute alypin which seems to work as well. The pharynx, base of tongue and epiglottis are deadened with a curved applicator. In about 5 minutes the direct laryngoscope is introduced and the anesthetization completed through it.



3. Direct Laryngoscopy. Head straight on table. Girl, 17 years old. No anesthetic and patient not held.

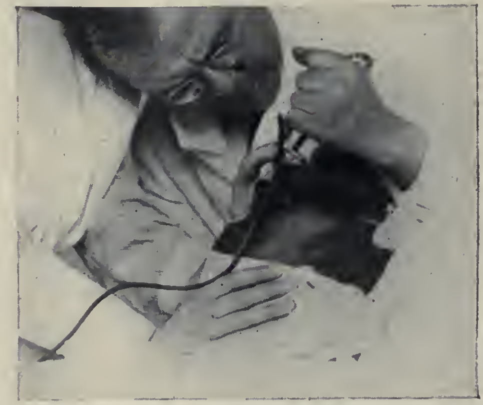
I wish to emphasize the fact that when the laryngoscope is ready for introduction, the head should be slightly extended and turned to the right or the left, according as the operator may desire to enter the mouth from the left or the right side. With the mouth open the instrument is introduced between the bicuspid teeth and as it passes down, the tongue is pushed to the opposite side. When the epiglottis comes into view, the spatula end of the laryngoscope is passed behind it and slight pressure upward on the handle suffices to bring the larynx into view. If the anterior commissure is not seen, the nurse is told to push the head forward until the straight position is assumed when all parts of the larynx are usually seen clearly. It is remarkable how little force is exerted on the instrument in this method. In some cases the weight of the speculum almost brings the larynx into view. The right hand is free for any operative procedure.



4. Direct Laryngoscopy. Boy, 6 years old. No anesthetic and patient not held.

One great advantage of the position is that with the instrument in a straight position, the head can be brought from left or right to an erect posture so that small tumors of the cords can be approached from the side which makes removal easier. Other advantages are the shortening of the distance from the teeth to the larynx, the slight danger of injuring the teeth, pushing the tongue to the opposite side and the complete relaxation of all neck muscles. With this method and the Jackson instruments, I have never failed to get a good view of the larynx at the first sitting. It can be confidently asserted that in most patients operations can be successfully performed at the first attempt. This method will be found far superior to the passage of the speculum between the incisor teeth which compels more extension of the head, the pressure of the tongue against the floor of the mouth, more force on the instrument to see the larynx with frequent failure to see the anterior commissure. There is also greater danger of injuring or displacing teeth.

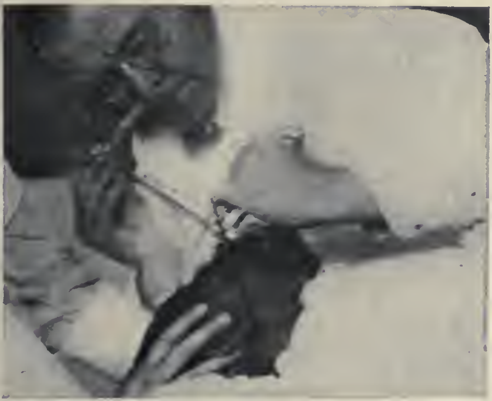
In children under 6 years of age, I always use the straight method of direct laryngoscopy without anesthesia of any kind for examining and operating. The method of procedure is as follows: With no preliminary preparation the little patient is securely pinned in a sheet so that the arms and legs are practically immovable. He is then placed flat on the table with the head in the normal, straight position. An assistant stands at the head of the table and holds the head so that it cannot be moved while nurses look out for the arms and legs. The operator stands at the left of table facing the patient and holds the Jackson speculum in the left hand. The mouth is forced open, if necessary, with the thimble and the instrument is passed straight down between the incisor teeth. When the epiglottis comes into view, it is hooked up with the spatula end and by raising the handle slightly the larynx is seen. In most cases the entire larynx is seen; if, however, the anterior commissure does not come into view, the thyroid cartilage is pushed back by an assistant. The en-



5. Direct Laryngoscopy. General anesthetic preparatory to passing bronchoscope.

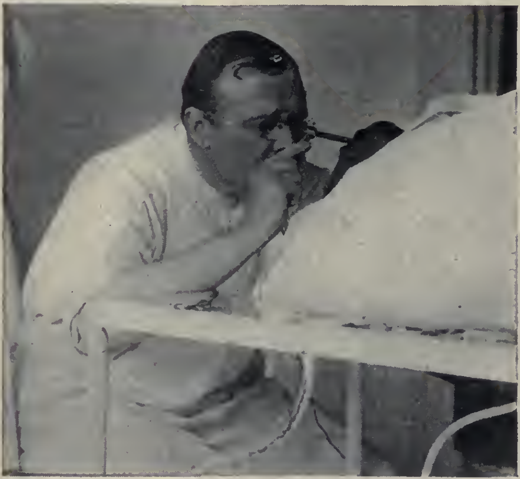
tire procedure takes a few seconds. There is no traumatism and the child leaves the table unhurt. I have made repeated examinations in the same patient to watch the progress of papillomata and have yet to see any bad results. The method is simple, easy and quick and gives the best possible view of the larynx.

It may be of interest to refer to the modified Jackson laryngoscope. In my earlier work I used his old laryngeal speculum which I believe is now obsolete. I wish to say that it is a most valuable instrument for the examination of the upper end of the esophagus in children in both the extended and straight positions. While the speculum worked well it was a little too long for small children. To obtain an instrument more suitable for a child's throat, I had the vertical part of the handle of the slide speculum cut off and a screw arranged in it so that it can be attached or detached at will. With detached handle the speculum is ideal for the straight method in children with or without anesthesia. With handle attached, the instrument is ready for use in the sitting position.



6. Passing bronchoscope, head straight on table. Bronchoscope is in trachea.

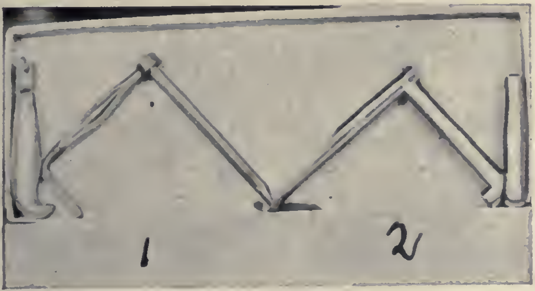
Bronchoscopy: I think all bronchoscopists will admit that the most difficult stage in bronchoscopy is in passing the tube between the vocal cords. Once below the cords, it takes no special skill to push the tube further down. The usual way and, so far as I know, the only way of passing the bronchoscope, is with the head in extension either in the sitting position under local anesthesia or over the head of the table under general anesthesia. In extension under general anesthesia the same difficulties are encountered as in direct laryngoscopy. In order to prevent the strain on the forearm and the necessity of overcoming the tenseness of the neck muscles, I attempted to pass the bronchoscope with the head in the straight position. With the head flat on the table the laryngoscope is passed as above described. When the larynx is brought into view, the bronchoscope is passed through the speculum until the vocal cords are reached. The eye is transferred to the end of the smaller tube, which, under the influence of a slight twisting motion, slips between the vocal cords. The slide speculum is now removed, the bronchoscope left *in situ,* supported by an assistant, the head gently lowered over the end of the table and the examination proceeded with as in extension. In passing the bronchoscope the operator stands to the left as in direct laryngoscopy.



7. Bronchoscopy and esophagoscopy. Cushion removed and head lowered to plane of table. Head under complete control of operator.

Some time ago it occurred to me that it might be possible to pass the bronchoscope and examine the trachea and bronchi without lowering the head over the end of the table, thus doing away with the necessity of a trained assistant and giving the operator more room and allowing him a more comfortable position while working. In this method the patient is placed on rather a high cushion while the head is supported by another cushion. The laryngoscope and bronchoscope are passed in the straight position as described above. With the bronchoscope in position the cushion under the head is removed and the head allowed to drop to the plane of the table. If the distance from the cushion to the plane of the table has been properly estimated, the head is under complete control of the operator and no assistant is needed to move it. I have found that side movements are unnecessary, while the up-and-down movement is regulated easily by a small pillow. With the head in the proper position the right and left bronchi with their branches are rapidly explored. In this position, with the patient properly anesthetized, one is surprised how little extension is necessary for successful work. The operator sits on an ordinary stool at the head of the table and is much more comfortable than with the head over the end of the table.

Bronchoscopy in the sitting position: Under local anesthesia the laryngoscope is introduced as above described. With the head slightly extended and turned to the side, the entire larynx is seen clearly. The bronchoscope is passed through the laryngoscope and, without regard to the breathing or the movements of the cords, is gently pushed into the trachea. The procedure takes only a few seconds if the larynx is properly anesthetized. I now seldom use the laryngoscope for passing the bronchoscope in the sitting position. After anesthetizing the larynx I pass the bronchoscope from the side with the patient's head almost straight. With the end of the instrument the epiglottis is pulled forward and the bronchoscope easily passed between the cords. A point of great importance in all these positions of the head is the fact that larger tubes can be passed than in extension.



8. Instruments used in direct laryngoscopy and upper esophagoscopy. 1. Jackson's old speculum, and 2, separable speculum with modified handles.

Esophagoscopy: The examination of the upper end of the esophagus can be made in two ways. With the head over the end of the table Jackson's old laryngoscope in children is passed behind the larynx, which is lifted up and a good view of the esophagus obtained. The second method is that of Mosher which has been described above. His instrument is used and is passed into the esophagus which opens up to the clavicle. A third method which can be used easily and quickly in children without anesthesia, is as follows: The child is pinned in a sheet and placed on the table as in the straight method of direct laryngoscopy. The head is held and the modified laryngoscope is passed until the larynx comes into view. The spatula end of the instrument is now passed behind the larynx and slight pressure on the handle suffices to open up the upper end of the esophagus for an inch. In this way a stricture or a foreign body can be quickly diagnosed and the foreign body removed as easily as with the head in extension. The operator stands during the examination as in direct laryngoscopy. In adults under general anesthesia the same method may be used in examining the upper end of the esophagus.

In all the methods described no complicated instruments are used. My armamentarium for examining the larynx and esophagus consists of a thimble and Jackson's two laryngoscopes, the old speculum and the modified laryngoscope. The greatest advantage of the methods is the fact that one does not need trained assistants. I have worked successfully in hospitals where the assistants had never seen such work.

To illustrate the ease with which the methods can be used, I wish to cite briefly a few cases which have been treated during the past year:

Case 1: A little girl, 2 years old, was brought to me from Winston-Salem, N. C., with the history of having swallowed a chicken bone. Four days before, while eating soup, she suddenly had a choking spell during which she nearly died. Dr. T. W. Davis located the bone in the larynx and attempted to remove it with the mirror. He did not succeed and brought her to the Presbyterian Hospital for examination with the direct laryngoscope. The patient was placed on the table with the head in the straight position, the laryngoscope passed and the bone located between the vocal cords. It required only a few seconds to grasp the foreign body and to remove it with Pfau's forceps. Recovery was uneventful. The bone was so tightly wedged between the cords that some force had to be used to dislodge it.

Case 2: Dr. J. L. Hirsh referred a boy, 5 years old, to me for aphonia of long standing. Since it was impossible to examine the patient with the mirror, he was examined at the hospital with the head in the straight position. No difficulty was experienced in getting a good view of the larynx. The diagnosis was multiple papillomata involving chiefly the anterior part of the larynx. A few days later a large mass of papillomatous tissue was removed with the head in the same position without anesthesia. This patient has been operated upon several times and applications of alcohol are now being made to shrink up the tissue in the anterior commissure. None of these examinations have taken more than a few seconds and the little patient does not mind them.

Case 3: Mrs. R. N., 30 years old, was referred to me by Dr. M. L. Todd for huskiness of the voice following the discovery of a tubercular lesion at one apex. The patient was so nervous that a strong cocain solution had to be used to get a view of the larynx with the mirror. The posterior wall showed a decided thickening. A few days later the patient was sent to the hospital and the tissue removed with the head slightly extended and turned to the right. The laryngoscope was introduced between the left bicuspid teeth.

Case 4: Mr. N., 26 years old, was referred to me by Dr. St. Clair Spruill for huskiness of the voice of seven years' standing. He had previously had three unsuccessful operations with the mirror for a tumor of the left vocal cord. The growth was situated on the cord near the anterior commissure. Under cocain anesthesia the papilloma was removed at the first sitting with the head slightly extended and turned to the left.

Case 5: In December, 1910, a patient was referred to me by Dr. F. M. Winchester, of Charlotte, N. C. Five days previously he had aspirated a scarf-pin which proved to be in the right bronchus. Under general anesthesia with the head straight on the table the bronchoscope was passed. The head was then lowered over the end of the table and the examination proceeded with.

Case 6: A boy, 8 years old, developed dyspnea for which no cause could be found. Under general anesthesia the bronchoscope was passed with the head in the straight position. The head was then lowered as in the "Boyce position."

807 North Charles Street.

FOREIGN BODY (INSTRUMENT) IN THE SPHENOID SINUS.*

DR. ISAAC M. HELLER, NEW YORK CITY.

Foreign bodies have been lost in almost every conceivable cavity of the human body but until recently the sphenoidal sinus has been happily free. This is owing to its peculiarly protected position in the nose with its small ostium high up behind the middle turbinate.

Latterly, however, since the work of Onodi, Hajek, Killian and others has shown us the surgical importance of this space and the frequency with which it may be the seat of pathological process, the sphenoidal sinus, too, has proved its possibility as a receptacle for extraneous objects. Oppikorfer, in 100 autopsies exposing 200 sinuses, found stomach contents nine times or four and one-half per cent, five times on one side only and twice on both. He further quotes Wertheim, Minder and Martin who met with similar conditions and who claim that the vomitus entered the cavities during the life of the patient. Oppikorfer on the other hand, believes it to have happened after death or shortly before with the patient in a profound coma. He bases his contention on the fact that in all the cases reported, the mucous membranes of the sinus in some were perfectly normal, in less than one-half there was a catarrhal inflammation and none contained pus. He thinks it scarcely possible that stomach material could remain in contact with so sensitive a tissue as the lining membrane of this cavity for any length of time without causing a marked purulent reaction. Further, in two of his cases which were reliably watched during the illness and where positively no vomiting had occurred during life, the above condition was found on section. This, he states, was due to the shaking up of the cadavers during transit.

Tunis[2] also reports the results of one hundred autopsies exposing two hundred sinuses in the pathological department of the Allgemeines Krankenhaus in 1909. The writer was in Vienna at the time and had the pleasant privilege of witnessing some of the sections and assisting in going over the case-histories. In none of these was anything of a foreign nature found. These, of course, were taken at random and represented all the usual causes of death, which tends to bear out Oppikorfer's contention. The ostium sphenoidale must be extremely large and surrounding parts relaxed or perhaps missing as in a marked case of atrophic rhinitis, for stomach contents to enter this recess during life.

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*Read at the meeting of New York Academy of Medicine Section on Otology and Laryngology, May 22, 1912.

Chiari[3] reports a case of a man brought to the surgical division of the Allegemeines Krankenhaus with a bullet in his sphenoidal sinus as shown by the Roentgen ray. This the professor removed by the nasal route and the patient recovered. It is the first time, so far as I am able to ascertain, that a bullet had been taken from this sinus through the nose.

Voislawsky[4] is the first to record a foreign body in the sphenoid as the result of operative interference. Briefly it is as follows: Man, aged 38, with pan-sinusitis, on February 10, 1910, had his middle turbinate and ethmoid cells removed. Following this, while local applications were being made, the cotton became detached from the applicator and diligent search failed to find it. The doctor was called from the room and on his return was shown a piece of cotton which patient had blown from his nose during the absence and which was thought to be the lost swab. On October 10, while violently blowing his nose, the patient expelled a bit of cotton which looked as if it had been roled on an applicator.

On April 22 of the following year, this same patient, who was a physician, having a bad cold introduced some adrenal solution on a cotton swab into the right nostril to reduce the congestion of the inflamed mucous membrane. He again lost the cotton and on May 22, Dr. Voislawsky removed it from the sphenoidal cavity by means of a bent probe after a stay of just one month.

Charlotte F., aged 19, milliner, called November, 1911, complaining of more or less difficulty in nasal breathing, worse at night. She had been to two clinics where operation had been advised. The septum was markedly deviated to the left impinging on the turbinates while the concavity on the right was almost completely filled with a large bullous middle turbinate. After explaining to the patient the objects and necessity of operating she reluctantly consented. On December 5, 1911, under cocain and adrenalin, I removed the left middle turbinate. This was so large and crowded between the septum and external wall that I was unable to remove it en masse and it came away in two portions. Then I noticed a small opening in the anterior wall of the sphenoid through which the glistening mucous membrane lining was plainly seen.

The patient was of an intensely neurotic temperament who flinched each time an instrument approached the nose and kept up a continuous stream of inquiries of "what are you going to do now?" interspersed with expressions of fear. Hemorrhage was moderately brisk and after a short wait it was seen that nothing remained but to smooth off a few rough projections from the stump. While doing so with the Hartmann alligator forceps (Figure 1), Miss F. suddenly twisted her head to one side and I felt something give way in the instrument. On its withdrawal, the terminal section was found missing (a—Figure 1, having become disarticulated from b—Figure 1). The patient saw this too, which, as can be readily imagined, did not tend to allay any of her previous apprehensions and nervousness. Meanwhile hemorrhage was fairly free and diligent search failed to find the "missing link." After working until it was clear nothing further could be accomplished under those circumstances and fearing that manipulating in the dark might push the part into the antrum or orbit, the nose was lightly packed and patient sent home. Thirty-six hours later the gauze was removed but clots and oozing precluded a satisfactory in-

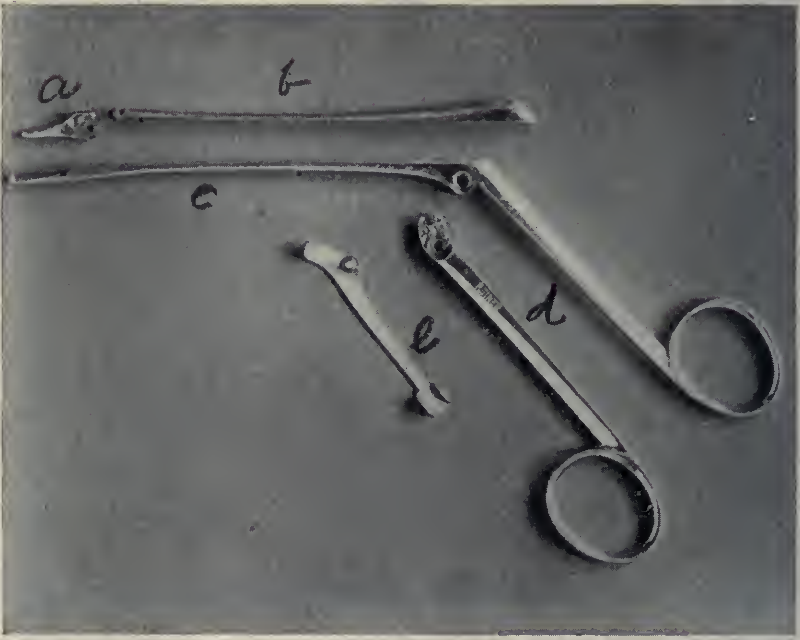

Figure 1.

spection of the field. On December 8, two x-ray pictures, antero-posteriorly and laterally were taken, but were too faint to be of any assistance. On December 10, nose was again inspected and probed without touching anything of a foreign nature. Oozing had been more or less continuous but no hemorrhage.

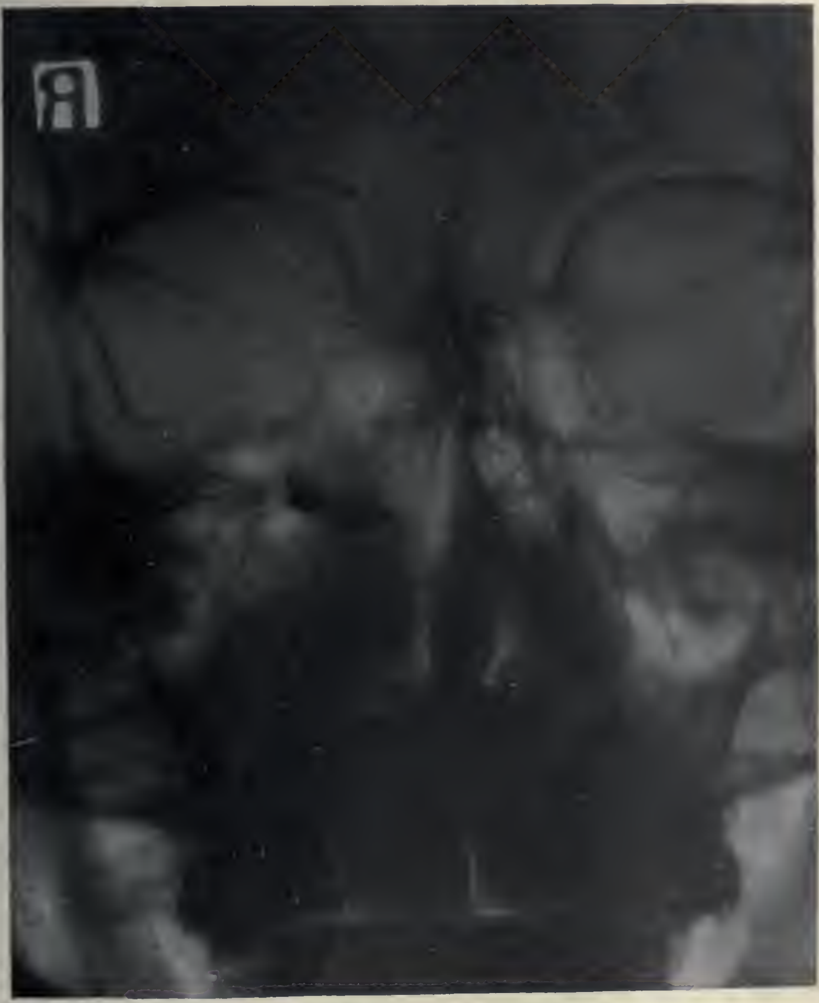

Figure 2.

At 11 o'clock that evening she suddenly started to bleed profusely from the right side and continued until 4 a. m., when the flow stopped spontaneously. Patient came to the office later that morning but owing to the recent hemorrhage nothing was attempted. On December 16, Roentgen pictures were taken again and this time successfully as shown in Figure 2. These proved clearly the presence of the instrument in the right sphenoidal sinus.

Our course was now plainer. As long as the body lay in this cavity probably no harm would ensue by waiting until all reaction had subsided. Therefore she was advised to return to her work particularly as her busy season was about to start. She reported at bi- or tri-weekly intervals for control when it was noticed that granulations were springing up about the entrance to the sphenoid. A probe was passed through these readily, but failed to touch the corpus alienum.

On May 9, 1912, the second operation was performed. This time to overcome the patient's nervous excitability, she was given morph. sulf. gr. ¼, hyoscine hyd. gr. 1/100 per hypo. two hours before beginning. It worked almost like a charm. She became much quieter, at times somnolent and I believe I was able to use more cocain than had the hypnotic not been given. Free use of epinephrin shrank the granulations decidedly and with Hajek's sphenoidal forceps the anterior wall was taken away close to the floor. A bent probe now touched something metalic on the floor of the sinus and a little manipulating brought it to view. A dressing forceps easily delivered the missing part much to the gratification of both operator and patient. The procedure was painless, took about five minutes, and bleeding was so slight as to demand no packing.

The accident impressed this fact forcibly upon me: When the head is in the usual position for operating on the middle turbinate, especially its posterior half, the anterior wall of the sphenoidal body assumes the position of the floor of the middle meatus. Therefore, should there be a sufficiently large opening in the anterior wall objects dropped from the middle meatus can fall readily into the cavity in question. It is well to remember this fact when pieces of cotton are lost in the nose. The dimensions of the part are 17x6x4 mm.

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450 Tremont Avenue E.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

(Regular Meeting, November 27, 1912.)

JOHN F. MCCOY, CHAIRMAN.

Paralysis of the Respiratory Nerve Due to Circulatory Lesions; With Remarks on Recent Therapeutic Measures. By DR. J. W. GLEITSMANN.

To facilitate the disposal of the subject, the paper was divided into five parts: (1) Brief physiological remarks; (2) Recurrent paralysis from heart lesions in general; (3) Paralysis in connection with mitral stenosis; (4) Aneurysm; (5) Therapeutics.

1. The proclivity of the abductor muscles to paralysis is well known, the reason for it having been explained by Grabower, who by painstaking observations counted the number of terminal nerve fibers of the laryngeal muscles, and found that of all the laryngeal muscles the posticus has the smallest number of nerve terminals, absolutely as well as relatively in regard to its size. Semon believes more in the great vulnerability and the biological differences in the muscular structure of the abductors.

It is known that a recurrent paralysis can change to an abductor paralysis, because the stronger adductor muscles recuperate more quickly than the abductors if the underlying lesion shows a tendency to improvement. Four cases were cited illustrating this, reported by Louis Elsberg, Semon, Landgraf, and the writer.

It has been observed that the glottis is wider in the dead than in bilateral recurrent paralysis, and this is of great importance in explaining some phenomena about which decided differences have existed and probably still exist. The greater width of the glottis in the dead is due to the inaction of all the laryngeal muscles while in recurrent paralysis the external tensor, the cricothyroid muscle, which is innervated by the superior laryngeal nerve, still retains its function, which results in an approximation of the cords.

The position of the vocal cords near the median line after experimental surgical severance of the recurrens, led Grossmann to claim that the glottis stood in the cadavaric position in such cases and that therefore the idea that posticus paralysis alone caused the position of the cords in the median line was erroneous. Grabower showed the fallacy of this contention by his experiments on dogs; and demonstrated that the position of the cords is due to the inability of the thyro-cricoid muscle to retain its function of extension, and thereby adduction of the cords for any length of time, if unaided in its action by the adductors when they are paralyzed.

2. Cases of recurrent paralysis from heart lesions in general were cited from Gantz and Low, and reference was made to reported cases resulting from pericarditis. Pericardial effusion was observed by Bauemler to be the cause of a bilateral recurrent paralysis; the condition disappeared with the absorption of the exudate. The writer said that so far

as he knew this was only recorded instance of a cure of bilateral recurrent paralysis due to organic disease. Fein reported a case of syphilis as the cause of a left recurrent paralysis, as all the symptoms disappeared after specific treatment.

3. Ortner, in 1897, reported the first case of left recurrent paralysis due to mitral stenosis, attributing the paralysis to compression of the nerve between the aorta and distended auricle. This was confirmed by autopsy. Later observations by others demonstrated that the pathological lesions producing recurrent paralysis in mitral stenosis showed a great variety of local conditions, in many instances differing from those in Ortner's case. Kraus reported a case of mitral stenosis, tricuspid insufficiency, and hypertrophy of the right ventricle, the Roentgen ray showing enlargement and displacement of the heart. Autopsy showed that in consequence of this displacement the relationship of the aorta and pulmonalis had changed and that Botalli's ligament exerted traction on the nerve. Fetterolf and Morris have analyzed the results of autopsies of eleven cases found in literature—attributing the recurrent paralysis to direct compression on the part of the auricle or its appendix in seven cases; to cardiac displacement in one; to the effect of persistently patulous ductor arteriosus in one; and to indirect compression acting on the primary artery in two cases. An excellent resume of the subject is published by Garel.

4. The deleterious influence of the aorta upon the recurrent nerve was recognized in pre-laryngoscopic times. Legroux in 1853 spoke of the weakness of the voice, partial aphonia, and hoarseness which he attributed to compression of the recurrent nerve by an aneurysm. The first laryngoscopic observation was made by Traube who reported two cases.

A number of cases of recurrent paralysis are recorded as due to rheumatism, but care must be exercised in this matter as prolonged observation of patients and the use of modern therapeutic measures may lead to finding a true pathological lesion. Levinstein for some time treated a patient with right recurrent paralysis, believing it to be of rheumatic origin, but finally by the use of the Roentgen ray he found it to be caused by an aneurysm of the right subclavia producing compression on the recurrent nerve. Finder reported the case of a patient with recurrent paralysis, aortic aneurysm, and locomotor ataxia, and found in one clinic twenty-four autopsies of cases of locomotor ataxia, over one-third of which had also aortic aneurysm.

Bilateral recurrent paralysis due to aortic aneurysm is rare. and is caused by a very large aneurysm involving the trunk of the anonyma and the subclavia. Bernhard analyzed nineteen cases reported up to 1903.

5. Therapy. Horsley in 1909, reported a case of complete paralysis of the left recurrent due to a bullet injury. This was treated by incision along the sterno-cleido-mastoid, excision of the diseased ends of the nerve, and approximation of the healthy nerve-ends with chromic catgut, muscular tissue being drawn over the suture. Improvement began after two months, and recovery was complete in nine months.

Navratil reported some interesting experiments on dogs, in which he made anastomosis of the recurrent nerve with the descending branch of the hypoglossus, guarding the sutured ends by Foramitti's method. Grabower published an interesting case, which confirmed his statement as to the function of the crico-thyroid muscle. The patient had been operated upon three times for goiter which exerted pressure on both recurrent nerves; the adductors of both sides recuperated, drawing the cords towards the median line, thereby causing dyspnea, which necessitated tracheotomy. Grabower advised neurectomy of the superior laryngeal nerve of one side. After this was done the left cord began slowly to recede from the median line, and a month and a half later the tracheal cannula was removed. Mertens also reports a similar gratifying result from neurectomy of the superior laryngeal. The latest procedure for alleviating unilateral recurrent paralysis was reported by Bruenings to the Society of German Laryngologists, who injected paraffin into the cord, in an attempt to counteract the atrophy and weakness of the paralyzed cord and restore its phonatory position. Of the first three patients treated in this way, two regained their voices, and the third was greatly relieved. A year later he reported five other cases with similar results. He had no ill sequelae, and in 1912 the oldest patient spoke with an almost normal voice.

DISCUSSION.

DR. QUINLAN said that he did not feel prepared to discuss the paper, but that he wished to congratulate the author upon his able research and classical presentation of the subject. All know how difficult these cases are, and the last word in regard to diagnosis and treatment has not yet been said. He had failed, however, to elicit any new note in therapeutics or in the agencies for the relief of these conditions. Unfortunately, he has had from time to time cases of recurrent paralysis, which have one after another defeated his efforts. It was always a pleasure, however, to listen to Dr. Gleitsmann's views and to enjoy the treat he gives his hearers.

DR. FREUDENTHAL said that Dr. Gleitsmann had referred to the greater vulnerability of the abductor muscles, and he himself had been able to prove this law of Semon's some six or seven years ago, when he had examined all the cases of tabes and sclerosis at the Montefiore Home. He had found a great many interesting cases that gave no symptoms at all. If it were not so difficult to examine them he would like to do it again; by repeated examinations he had seen first only a paralysis of the abductor muscles and a few months later, that the whole recurrent nerve was paralyzed.

Dr. Finder had found that one-third of his cases of tabes had some aneurysm, and one should be careful in making a diagnosis of recurrent paralysis not to omit this aneurysm. Dr. Freudenthal said that he always kept in mind the condition of the chest, which in his cases had been examined by various observers. He did not recall more than one or two cases of aneurysm seen by him in connection with this paralysis. In recurrent paralysis the normal vocal cord has to learn how to compensate and go over to the affected side, so as to close up the glottis. He had been impressed by the findings of these patients. People with absolutely normal voice and breathing, showed suddenly a recurrent paralysis.

DR. THURBER said that he had reported once before the case of a man at the Vanderbilt Clinic who had a left recurrent laryngeal paralysis and had found a way to give himself a good, loud voice by external pressure with his thumb; thus producing the required adduction by external pressure. He discovered how to do this by trying to call at some distance when his head was turned so that his collar made pressure on the side of his larynx.

Dr. Yankauer said that in some cases the diagnosis of intra-pulmonary tumors is not made by the internist, for the symptoms are obscure, and the tumor may be small. Bronchoscopy, however, affords an excellent means of recognizing the causes of this paralysis, for any tumor that is large enough to press on the recurrent nerve would be likely to show in the trachea. The examination of these patients with the bronchoscope, however, requires the observance of certain precautions. Any muscular effort or strain on the part of a patient with an aneurysm is dangerous, and if we do not know the cause of the paralysis we must assume that an aneurysm may be present and consequently avoid subjecting the patient to any risks. For this reason it has been claimed that the use of the bronchoscope is contra-indicated in a case of aneurysm, or even of suspected aneurysm. He has examined eight such cases with the bronchoscope, in which the diagnosis of aneurysm or extra-bronchial tumor was made—sometimes with the bronchoscope first, sometimes the diagnosis had already been made. In none of these cases had he met with any accident, but the patients all submitted readily to the examination with the bronchoscope and did not struggle or resist. In all these instances, however, he took great care not to pass the bronchoscope beyond the tumor, not even to advance so far as to touch the tumor with the instrument. This precaution is important.

The appearance of the trachea during the bronchoscopic examination is characteristic and is easily recognized. When lumen-presentation is brought about, the condition, however, must be distinguished from other bronchoscopic appearances due to bending of the trachea or a branching when the growth is in the bronchi. In one of these cases of particular interest, the patient had the paralysis on the right side, and the physical signs and symptoms of a large growth involving the right chest, which was also shown by the radiograph. The bronchoscopic examination was made under local anesthesia without difficulty, and the tumor, pressing on the right wall of the trachea and compressing the lumen into a crescentic shape, was easily made out. The bronchoscope was kept in position for about fifteen minutes, and was passed without the slightest effort or resistance from the patient, who withstood the manipulations without any mishap. The bronchoscope, however, was not passed beyond the growth. Dr. Yankauer said that incidentally, one reason for his preference for external illumination rather than for the Jackson bronchoscope in spite of the practical advantages of this instrument was the necessity of finding the growth before the bronchoscope reaches it, for in the case of the latter instrument one cannot see until close to the growth, while with external illumination one can see the bifurcations as soon as the vocal cords are passed.

The internist was anxious to get a more detailed examination, so a week later the bronchoscope was passed a second time. On this occasion it was easier than at the first. An effort was made to pass the growth, but when the narrow part of the trachea was reached it was found impossible to get beyond the growth without a great deal of pressure. No injury was produced nor was there any bleeding or blood stained mucus, and after the operation was over the patient said that it had not bothered him as much as the first time. He got off the table, and would have walked back to the ward, had he been permitted. This was in the afternoon. On the next morning, he suddenly became dyspneic, and in an hour passed away. It was not possible to say whether or not the passage of the bronchoscope had any relation to the death of the patient in this case. The dyspnea began nineteen hours after a bronchoscopy which he had permitted without difficulty. That seemed rather a long time for any reaction to begin, and a patient with a large tumor involving practically all of the chest on one side is apt to die in that way, and it is possible that the death was a coincidence. Unfortunately there was no autopsy and the cause of death could not be ascertained. It certainly was unfortunate that although he had examined so many patients by the aid of the bronchoscope without mishap as long as he kept on the near side of the growth, the patient should have died the first time he tried to pass the bronchoscope beyond the growth. All of the cases which he had seen were examined under local anesthesia. One of those referred to by Dr. Gleitsmann was examined in his office. In that case the aneurysm was not large and had been overlooked by the internist; subsequently the patient was taken to the hospital and a radiograph was taken, and some slight physical signs were elicited. The diagnosis, however, in that case was made with the bronchoscope first.

In another case of special interest, the growth was on the left side, and pressed upon the left bronchus and not upon the trachea at all.

Examination in these cases can be made safe, if the patient does not resist, and if the bronchoscope is kept away from the growth.

Dr. Gleitsmann said that he was aware of the difficulties of bronchoscopy in cases of aneurysm, and it should be attempted only with the exercise of great care and after much experience. Formerly we were warned against the use of bronchoscopy in such cases, but with proper consideration and attention the bronchoscope can be a great aid in reaching a diagnosis.

He had at first intended to extend his paper to all the affections of the chest, mediastinum, lungs, etc., but had found it necessary to limit himself. They are detected by the bronchoscope and by the effect of pressure against the recurrent nerve.

Removal of Foreign Body From Left Bronchus. Removal of Foreign Body From Esophagus. Removal of Foreign Substance From Both Bronchi. By Dr. Sydney Yankauer.

The first specimen was removed from the left bronchus of a boy of 5 years, who gave the following history: For four weeks he had had a cough with profuse expectoration and intermittent fever. Examination showed physical signs of consolidation and effusion on the left side; he had an evening temperature of 104°. He remained in the hospital for a week, during which time the acute symptoms disappeared, but the physical signs did not clear up. A radiograph was taken, and showed the presence of a foreign body on the left side, outside of the mammary line.

The parents were sent for, and upon questioning gave the history of the inhalation of a foreign body some five weeks previously. They had sent for a doctor, but he thought it had passed down into the stomach, and they had given the matter no further attention. This was the second case in which a foreign body was discovered without any previous history. In this case it happened that the substance was of a nature to give a dense shadow; in the other case it was a soft bone and gave no shadow.

On passing the bronchoscope, the left bronchus was found filled with granulation tissue. After removing this a good deal of pus was expelled and the foreign body was seen and removed. The boy made a good recovery in about a week.

The second case had a somewhat similar history. The child was 2 years of age and was eating walnuts; she ran across the floor and fell, and began to cough, and became cyanotic. A doctor was sent for, who thought she was suffering from diphtheria and gave her antitoxin. The cyanosis disappeared, but the attacks of coughing continued, and the cyanosis returned several times a day. After two weeks these attacks became so bad that the cyanosis was accompanied by convulsions. A laryngologist was then consulted, who referred the case to Dr. Yankauer The patient was anesthetized and a bronchoscopic tube passed, but the trachea was so swollen that it was difficult to pass even a small tube However, this was eventually successful, and several small pieces of walnut meat were found and removed. From previous cases of this kind it was suspected that there might be other pieces which had escaped observation. The examination was difficult as there was a great deal of swelling, but eventually with the aid of cocain and adrenalin the left bronchus was entered, and several more pieces of the walnut meat were removed. A careful exploration was made and the bronchus was thoroughly cleaned out, and the child made a good recovery.

While eating chicken the third patient suddenly felt something solid in his mouth, which slipped down his throat. He immediately began to gag and vomit. He went outside and while bending over a basin, his false teeth dropped out and disappeared. Eventually as he thought, the piece of bone went lower down in his throat and remained there. He had a good deal of pain and was unable to swallow. In brief, the history was that of swallowing a piece of bone while eating. On introducing an esophagoscope to a distance of fourteen inches from the teeth, a glistening white body was found. This was grasped with the forceps and withdrawn with the esophagoscope as far as the cricoid, when it slipped back. The esophagoscope was again introduced and the same thing occurred a second and a third time. Finally, the foreign body was seized by the flattened portion and brought up to the cricoid region, but even then it could not be brought out. By holding it firmly but with gentle traction against the contracted muscle the spasm was overcome and the foreign body removed. It proved to be a part of the tooth place, which had evidently been cracked off while he was eating. Following the operation there was a slight abrasion of the posterior esophageal wall, swelling of both arytenoids and marked dysphagia. The patient was put to bed for twenty-four hours, after which the pain and swelling disappeared and he went home.

Regular Meeting, December 23, 1912.

Case of Nose Made Out of Finger. DR. CLARENCE MCWILLIAMS.

The patient, a man of 45, was admitted to the hospital on September 5, 1912. Two years prior he had been a stationary engine oiler. His right arm was caught in the belt and his face was drawn in so that the spokes of the wheel struck his face, annihilating the nose. He was then in a Long Island city hospital for twelve months, where he said he had had eleven operations. On admission to the Presbyterian Hospital, his face was entirely healed but terribly disfigured. It was marred by numerous scars, as was also the forehead, the skin of the forehead being attached to the bone by the scars. The projection of the nose was entirely gone, the nasal and cartilaginous portions being entirely missing, as was also the projection of the frontal bone forward. There was one small opening into the nasal cavity, admitting a probe. The left nostril was entirely gone, and its edge was attached to the bone beneath, while one-half of the right nostril remained and projected forward in a teat-like process. The defect in soft parts went up to within an inch of the frontal bone, and was one inch in transverse diameter and an inch and a half vertically. Any operation to reproduce the nose in such a case must introduce some bony support. Morestin has carried out a procedure of grafting a rib into the soft parts of the forehead and then turning down a flap containing the implanted rib to form the nose. This did not seem advisable because of the scars on the forehead and the wish not to increase his disfigurement by additional scars. There was nothing to be done but to graft a finger into the defect, because the man's condition was pitiable. He could get no position because of the deformity, and went around with a handkerchief tied about his face to hide his disfigurement.

The procedure followed was that described by Finney and McGraw. The head and shoulders were immobilized in a plaster of Paris splint the evening before the operation, and this splint was cut down on one side so that it could be quickly removed in the case of any accident during anesthesia. This splint was of great assistance in later immobilizing the attached hand and arm immediately after the operation. A knife inserted in the defect separated the soft parts from the bone beneath, extending up to the frontal bone, and the edges of the defect were pared all about the margin. The left finger was chosen. Esmarch about one arm; nail removed and scraped, exposing bone beneath. Metacarpophalangeal articulation opened by a posterior longitudinal incision; joint opened; head of metacarpal bone removed; division of anterior tendons, also lateral ligaments of joint. Finger was then free but united by soft parts, and nourished by uninjured digital vessels. Skin removed from whole circumference of last phalanx and tip of phalanx nipped off with rongeur. Finger then slipped into place, the extremity of the last phalanx going up to the frontal bone under a bridge of undivided soft parts. No suture was used to attach the phalanx to the frontal bone. A longitudinal denudation was made on each side of the second phalanx, about a quarter of an inch wide, to which the edge of the cheek on one side was sutured, and on the other that of the nostril, the defect between the check and nostril being filled in by the skin of back of finger. The first phalanx was left unattached, as it was later to be turned backwards. Interrupted silkworm-gut sutures were used. Plaster of Paris splint was then applied about head and about arm and chest. For a couple of days after the operation the pain in the arm was severe, but after that the arm went, so to speak, to sleep and there was no further discomfort.

On the fifteenth day after this operation, one of the digital vessels on one side of the finger was tied under novocain 4 per cent anesthesia; on the twenty-first day the finger was amputated through the metacarpophalangeal articulation, using novocain locally. No attempt was made to close the proximal end of the finger at this time. Heat in the shape of hot cloths was applied to the finger for twenty-four hours. Subsequently there was some necrosis of the soft parts on the end of the first phalanx, but not to any great extent.

Eight days later, the first phalanx was flexed to a right angle in relation to the second phalanx, and its tip was sutured in this position to the bone behind, while the soft parts covering it were also turned backward and sewed to the freshened lower border of the nasal defect. Sixteen days later it was necessary to remove the greater part of the first phalanx because of the necrcsis. After this operation there was some infection of the finger, the pus from which escaped through several places in the line of the scars. This infection, however, soon ceased. The tendons of the transplanted finger were not disturbed at any time during the various procedures, and are still in place.

The man is not yet a beauty, but his appearance is vastly improved. There is no sign now, after three months, of any re-growth of the nail. There is a small opening into the nasal cavity but not sufficient for respiration. He is a mouth breather. He has very little sense of smell. The wound caused by amputating the finger healed by primary union. The tip of the last phalanx seems to be solidly united to the frontal bone. During the twenty-one days that the finger remained attached to the face and hand, nourishment was entirely fluid, and was administered through a tube passed into the angle of the mouth. At the outset of the operation it was planned to wait but fourteen days before amputating the finger, but on the expiration of that time the patient was so comfortable that it was deemed safer to wait another week.

Dr. McWilliams asked the opinion of the members as to the advisability of attempting to improve the smelling function of the nose.

DISCUSSION.

Dr. Carter said that before deciding upon what operation is to be done in these cases—whether a finger is to be used, or bone first grafted into the skin of the arm and then transferred to the face later, as he himself had done in a case previously reported before the Section—the personal equation has to be considered. A great deal depends upon how much the man needs his finger. The loss of so useful a member is a serious drawback to the operation. There were several points, however, in this case in favor of the operation done by Dr. McWilliams, which should not be overlooked. It is a great deal easier to immobilize the hand on the face than to immobilize the arm in that position, for the elbow has to be protruded some distance beyond the head, and it is very difficult to put on a bandage that will hold it steady. Another point, too, is that the skin on the finger is nearer the color of the skin on the face than that of the arm. This is not due entirely to the fact that the skin on the finger is covered up most of the time and so is whiter, but it is of a different texture and its supply of blood is not so great as that over the face.

In doing the Carter operation, it must be remembered that the contraction of the flap that is taken from the arm is very considerable, and due allowance must be made; the flap should be made twice as large as is needed, owing to this contraction. There are serious objections to the finger method. It is quite a disadvantage to have to remove a finger; hardly anything would overcome that objection in a man who has to earn his living by manual labor. Further, if the nail is not completely destroyed, it would interfere with the permanent result. It is unfortunate that the man has no nasal breathing space, as this would add greatly to his comfort.

Dr. Carter said that he would like to know whether the patient has any sensation in his nose. He said that his own case, where he first transplanted the rib into the arm and then transferred the tissue to the face, was one where there was no nose at all, and that the woman has a nasal breathing space and sensation in her new nose; his case is of ten months' standing. Dr. Carter considers his own operation preferable to that of utilizing a finger.

Dr. Freudenthal said that he could not comment upon the operation itself, for he had had no experience in such cases, but in regard to the question of forming new nostrils he hardly thought he would advise trying that, as it would be impossible to give the man a satisfactory breathing nose. The mucous membrane could not be replaced, and without that he could not breathe satisfactorily; he would be in the same position as a man with atrophic rhinitis. The air would simply pass through, but it would not be assimilated.

Dr. Smith said that Dr. McWilliams deserved the highest commendations for obtaining such an excellent result. Those who had tried such work in the past had signally failed. Some years ago a prominent surgeon had attempted a similar operation, using the thumb, and suit was brought against him for the hideous outcome of the attempt. Looking at the pictures of the case before operation and the condition after, there was nothing but commendation to be expressed for such a wonderful piece of plastic surgery. Only those who had seen other attempts made to do such work could appreciate this case. Personally, he would prefer to attempt rib transplantation in order to save the finger, but it might have failed in this case, as there was no support for the rib, and so much tissue would have had to be transplanted that it seemed doubtful whether as good a result could have been obtained. The distal phalanx represents the columnar cartilage of the nose, and upholds the tip, while the piece of rib would have been perfectly flat.

Dr. McWilliams, closing the discussion, said that there was no sensation in the nose, though there might be some later on. In considering just what to do in this case, the finger method seemed the best, partly for the reason mentioned by Dr. Smith, i. e., the flatness of the anteroposterior diameter of the rib would have been very small and the nose would not have been projected anteriorly far enough. In the next such case he might try the rib first, and then use the finger as a last resort, if necessary.

Peri-tonsilar Abscess; Nitrous Oxid Inhalation; Death. DR. ERNEST V. HUBBARD.

DR. HUBBARD said that it is always a pleasure to report successes, but that once in awhile it was good for the soul to report a failure. He told of a patient whom he had seen last spring, a man, 31 years of age. He was first seen three years ago suffering from a peri-tonsilar abscess, from which he recovered. Subsequently he had two others which were lanced and from which he recovered in the same way. This last time, however, an attempt was made to lance the abscess, but without success; at the end of twenty-four hours, another attempt was made, again without success, and finally a third futile effort was made. Cocain was used in each instance, but no pus was found. The man's constitutional condition grew worse, his temperature was 104°, and something had to be done. An anesthetist was accordingly summoned, with the idea of operating under nitrous oxide. The anesthetist was one of the ablest men in the city. Only a moment or two before the operation the man had left his bed and gone to the toilet. Everything was made ready, and Dr. Hubbard was busy for a moment with his back turned, when the anesthetist called to him that the man was dead. He had had only two whiffs of the ether, when his heart and respiration stopped, and he was off in a flash. Every effort was made to revive him, using all the usual means for a space of two hours, but all to no avail.

As far as could be determined, the man was in reasonably good health previous to this trouble, his heart, lungs, and kidneys were in good condition. Death did not seem due to fright, for the man had been through a great deal, and did not seem to be affected with fright.

Everyone knows how trying these cases are, but the doctor said that he would never again administer nitrous oxid in a case of peri-tonsilar abscess.

DISCUSSION.

DR. HELLER told of a somewhat parallel case to which he had been called. An able dentist, who had administered nitrous oxid a great many times, had telephoned him to come to the office, and when he arrived the patient was dead in the chair. The man had been treated by a general practitioner for a swelling in his throat. This physician first thought of peri-tonsillar abscess, and incised it several times, but finding no pus present, and observing that the swelling was very far anteriorly, sent the man to a dentist. The dentist made a diagnosis of some infection around the root of the wisdom tooth, and advised extraction of the tooth. The physician told him to go ahead, and upon being asked about the anesthetic, he consented. The anesthetic was given and the tooth extracted, and as the dentist turned to lay the tooth down and then looked back at the patient, the man died. The family physician was summoned immediately, but the man was already dead. The dentist said that he could not feel that it was due to the extraction of the tooth, for there was no difficulty. No explanation could be reached, excepting that in some way the man had been infected. There was pus at the root of the tooth.

Whether there was an infection, causing a heart depression, could not be determined.

Dr. **Freudenthal** said that it would seem almost impossible that in such a case the patient should die from infection. A man could not die from an infection in a few seconds; but he might die from asphyxiation. He had had cases where the pus from the pharynx went down into the larynx, causing asphyxiation in a very short time.

Dr. **Seymour Oppenheimer** said that the case referred to by Dr. White and the one referred to by Dr. Heller were entirely dissimilar, in so far as in the one no operative interference had been employed before the death of the patient and in the other death occurred after or during the operation. He questions very much the judgment or wisdom in employing general anesthesia for the evacuation of any pus focus about the throat. The danger of aspiration of the contents of the abscess cavity when opened is a very serious one. Death occurs in these cases from asphyxiation.

Dr. **Carter** said that it would seem that Dr. Freudenthal had struck the nail on the head in stating that death was probably due to asphyxiation resulting from the anesthesia. Of course, where there is a large collection of pus anywhere near the entrance to the lungs, the natural passage is already constricted, and this constriction is increased by the nitrous oxid; for the vessels of the head especially become turgescent in any operation under this anesthetic. Dr. Carter believes that a certain amount of asphyxiation always occurs under nitrous oxid anesthesia.

Dr. **Smith** agreed with Dr. Oppenheimer in what he had said relative to general anesthesia in these cases. The air is insufficiently areated any way owing to the obstruction in breathing, even previous to the administration of an anesthetic, and when an anesthetic is administered the individual is unable to throw out the pus that accumulates in the larynx and trachea, consequently it is aspirated. It was a standing rule in his clinic that no patient with an abscess in or around the upper respiratory tract should have general anesthesia for its evacuation. From the innumberable evidences given of fatal cases following anesthesia for the evacuation of pus in and around the upper respiratory tract it seems conclusive that it should be forbidden.

Dr. **Joseph E. Lumbard** agreed with Dr. Smith that a general anesthetic was dangerous in any collection of pus in the throat. One or two precautions should always be taken; a prop should be placed in the mouth, as it is very difficult to get the mouth open when using nitrous oxid. The less general anesthesia given in these cases the better. Another important point is to have the head of the patient with the face downward, or the head very much lowered.

He asked if any of the gentlemen knew whether in any of these cases reported the gas had been turned with the positive pressure. That makes a great deal of difference, especially with a young subject. Some one had said that a patient anesthetized with nitrous oxid gas must be cyanosed. That is not correct.

Dr. **Hurd** told of a case of peri-tonsillar abscess which he had seen two years before, located behind the tonsil and extending down the lateral pharyngeal wall nearly to the level of the larynx. Examination of the larynx with the mirror revealed no edema around the arytenoids or elsewhere. The patient was in good shape and walked to the operating room. The mouth was opened, the swelling incised with a knife, and then with the finger the incision was enlarged downward; all in about five seconds. The man after that walked back to his room, said he felt much better and was greatly relieved, and I went out of the hospital. Ten minutes later he was dead. He must have died of acute edema of the larynx. In these cases general anesthesia seems usually contra-indicated. Hyoscin and morphin with local anesthetics are much preferable, and the patients will have to stand some pain. Some of them will die quickly, whether anesthesia is used or not.

Dr. McWilliams said that as he had listened to the various cases just reported, it seemed to him that the last death was due to an embolism and not asphyxia. It takes only two or three minutes for such a patient to die.

Dr. Hurd said that in the case he had mentioned the death occurred about twenty minutes after the operation.

Dr. McWilliams said that in the cases which he had seen in general surgical practice the patients would sometimes get along for ten or eleven days, when an embolus would break loose and get into a coronary artery or pulmonary vein and the heart stop. He was inclined to think that that was the condition which had caused the death, a pulmonary, coronary, or cerebral embolus.

Dr. McCoy said that one of the facts that stands out most prominently in the literature is that many of these patients die suddenly. He had had much experience in treating this class of cases of suppuration of the lower pharynx, the patients getting along very well apparently for awhile and then suddenly dying. There seems to be a severe infection which produces an effect upon the heart. He was more inclined to believe that it was an affection of the heart produced by extreme sepsis than an acute edema of the larynx, for that would require more than ten minutes, perhaps more than an hour's warning. In one of the meetings of the Section in the spring, a number of cases of this class were reported ending in sudden death. One of the points which would seem to indicate an extreme character of sepsis was that the cases were usually associated with high fever, profuse sweating, and extreme prostration. A general anesthetic would seem to be a bad thing in these cases, and yet cocain, which is a cardiac depressant, seems contra-indicated also. It is best to give a guarded prognosis in all cases occurring in patients over 50 years of age.

Dr. Hubbard said that he was glad that the unfortunate case he had reported had brought out this discussion, for he had learned some things that he had not known before. Replying to the question in regard to pressure, he was inclined to think that the pressure was positive, for the bag was filled but once and the patient had taken but a few whiffs of the anesthetic.

Replying to Dr. Freudenthal's question as to the condition of the patient at the time of death, he was inclined to believe that the man died from heart failure, in spite of the fact that death from nitrous oxid is due to respiratory failure. He agreed with Dr. Carter's remarks about death from heart failure. This man had been very ill and his heart had probably become much involved. He was white, not red nor bluish, but dead white, before death and after.

In regard to what had been said about the blocking of the throat with the abscess, and whether the operation had been begun—the man had not been touched. The patient was in the hands of the anesthetist, who informed him that the man was dead. His throat was not blocked, and his breathing was not interfered with. His general condition was good, and the local condition was simply the swelling in the throat after three incisions.

Paper and Demonstration of Suspension Laryngoscopy. DR. WOLFF FREUDENTHAL.

DR. WOLFF FREUDENTHAL described this novel way of rendering the larynx more accessible to our vision and instruments and said: The instrumentarium necessary for this new invention of Killian's consists of an operating table, a stand or gallows, a hook-spatula with a handle, a tongue holder and a mouth-gag, and finally for illumination a Kirstein head-light. After giving the details of each instrument used, the position of the patient and the mode of introducing the instruments, Dr. Freudenthal continues: After the adjustment of the apparatus is completed the view obtained is excellent. We see at once the interior of the larynx, more so naturally the posterior commissure; we see part of the trachea, the sinus pyriformis, the pharynx and occasionally the upper portion of the esophagus. At the same time we have both hands free for operation and the larynx is absolutely open to us, i. e., there is no hook nor tube in it to encroach upon its lumen.

In order to remove certain diseased areas from the interior of the larynx, we simply resort to a double straight curette, or any other suitable straight instrument, and this can be done as quickly or more quickly than I can put this in writing. I have done this repeatedly. At other times it is more difficult, but it is always easier than with the old method.

There are several advantages connected with the method. We see parts which could not be seen otherwise, as for example the anterior portion of the posterior laryngeal wall. Other parts, as neoplasms for example, assume a different aspect. It is easier for the patient and the physician to operate in this way.

Dr. Freudenthal has operated on a number of different cases and of late has used that method for the removal of submerged tonsils. The doctor considers it a valuable contribution to our laryngological technic and is convinced that it will bear good fruit in the future.

DISCUSSION.

DR. FELIX COHN said that he could endorse the statements of Dr. Freudenthal. He had had the occasion to use the suspension apparatus simultaneously with Dr. Freudenthal at the Beth-Israel Hospital, and also at the German Hospital with an apparatus placed at his disposal through the courtesy of Dr. Max Heiman, who had brought the apparatus with him from Europe this fall. How will the suspension be borne, is demonstrated by the fact that the suspension was demonstrated by the speaker a few days ago at the Clinical Society of the German Hospital to about fifty or sixty physicians under local anesthesia. Prof. Killian demonstrated the suspension laryngoscopy to 120 physicians, and one can readily deduce that the lapse of time required for such a demonstration would suffice, or any operative interference which might be necessary.

Dr. Freudenthal did not refer to one point, to the selection of cases. All cases cannot be suspended or can only be suspended with great difficulty. And the same rules and conditions hold as for an autoscopic or bronchoscopic examination. As a rule those patients that are easily autoscoped are easily suspended. The article of Killian has given the impression that suspension almost necessitates a general anesthetic. The speaker, however, found that the majority of cases can be examined under local anesthesia.

As far as the technic is concerned, the occasional slipping of the epiglottis referred to by Dr. Freudenthal may sometimes be due to a faulty method of introduction, and a little more experience, and occasionally a reintroduction of the spatula will overcome this difficulty without having recourse to methods of holding down the epiglottis by an extra mechanical device. It is beyond a question, that suspension laryngoscopy has come to stay as a permanent and valuable aid to the laryngologist, and that the apparatus will shortly become a part of the equipment of every hospital. In some cases one cannot only see the larynx and trachea, but even the bifurcation and the opening to both bronchi; it would therefore be possible to remove growths or foreign bodies from the trachea or even the mouth of the bronchus, without the use of a bronchoscope.

Dr. Smith asked Dr. Freudenthal whether the bronchoscope could be used as easily through this method as through the former method; and whether in fulguration of papilloma of the larynx there was any more danger of short circuit with this spatula than with that commonly used; also what advantage there was in esophagoscopy. He also wished to know what advantage was obtained in operating on adenoids and tonsils in this position over the ordinary method. There was very little danger in aspirating blood in the ordinary recurrent position, and to have all this apparatus in the way seemed unnecessary. Under the ordinary methods this operation is done so rapidly that the aspiration of blood does not enter as a dangerous factor. He also asked if there was any danger of paralysis or stiffness of the neck or other undesirable sequellae from this method.

Dr. Einhorn said that he had been present at the Clinical Society of the German Hospital when Dr. Felix Cohn had demonstrated this method of direct inspection of the larynx on a patient, and had looked into the larynx and trachea, and saw the vocal cords and the rings of the trachea. He had been so impressed with the advantages of this method that he had no doubt it would soon become popular. It was very simple, and one could see things just as they are, without using mirrors, and have the whole field in view. As to esophagoscopy, it might be of advantage to use this method in some cases, but the old method was not difficult. Very little time was required. As soon as the patient is in position the operation can be done very quickly, and the evil results of any pressure could not be great.

Dr. Cohn said that with the apparatus one could not only see the trachea, but could see the bifurcation and could look right into the bronchus, and that it was possible that foreign bodies in the trachea or bronchus could be removed without the use of the bronchoscope. That would certainly be a great advantage in some cases.

Dr. Carter inquired whether, in operations requiring an anesthetic, the anesthetic was administered before the apparatus was placed in the mouth, and also whether the patient's breathing was in any way interfered with while the apparatus was in position.

Dr. Heller asked what method of lighting was used.

Dr. McCoy said that one great advantage of this method was that the patient's head was held firm and steady for the operator without his having to depend upon an assistant, whose strength might give way just when the steadiness was most needed. Otherwise, he could see but little advantage in this method over Jackson's and others that had been described. One can see just as well and manipulate just as well. He had never experienced any difficulty in getting the instrument in and seeing the larynx perfectly. He could not quite understand how Dr. Freudenthal managed the epiglottis.

Dr. Freudenthal said that there were several points which he had omitted to mention in his introductory remarks, as he had not wished to make the paper too long.

In regard to the selection of cases, Dr. Cohen was perfectly right; some cases are easier to examine than others. A man with a stiff neck or a rigid jaw would be very difficult to examine in this way. Dr Cohen had spoken of two apparatus which are in the city. He himself had known only of this one kind which he had imported.

Dr. Smith had asked several questions, some of which had been answered in the discussion. One can see a great distance into the trachea, the bifurcation, etc., and one can operate on all these parts directly. The speaker had not used the bronchoscope in connection with this method, but intended to try it some time. He had not used the short circuit with the apparatus.

Replying to the question of lighting: In the demonstrations he had used the Kirstein head-light; small lamps can be attached, however, and the light thrown in directly.

One advantage over the older methods was that in no case was the blood in the way. Some tonsils bleed quite a good deal. The patients complain very slightly of stiffness or other unpleasant features. The tongue is not injured at all.

Replying to Dr. Carter's question about anesthesia: The anesthesia is administered before starting in, in order not to keep the mouth of the patient open too long. The apparatus does not interfere with the breathing at all.

Replying to Dr. McCoy: The instrument presses the tongue upward and the upper jaw is pressed downward. There is a wide space open generally. It is easy to see when the tongue has slipped or will slip, and the instrument can be taken out and re-adjusted so as to hold the tongue flat. It is probable that the instrument will be slightly improved.

Dr. Glogau reported that the patient with hysterical aphonia, presented at the previous meeting of the Society, had been treated with the high frequency current and had regained her voice.

THE PHILADELPHIA LARYNGOLOGICAL SOCIETY.

Regular Meeting, October 29, 1912.

DR. ROSS HALL SKILLERN, CHAIRMAN.

Apparatus for Illuminating the Accessory Sinuses of the Nose. DR. E. B. GLEASON.

The little apparatus, in fact a vest-pocket edition, is very simple in its construction and is inexpensive. It consists of an ordinary "ever ready battery" obtained at the hardware shop. The incandescent lamp is detached and in its place is attached a long tube containing ordinary lamp. It was demonstrated that the frontal sinus could be thoroughly illuminated; the maxillary sinus could not be seen as well, however, as the frontal. There is also an attachment to be placed in the ordinary mirror for examination of the larynx and naso-pharynx.

Resection of the Ascending Process of the Superior Maxilla in a Case of Naso-pharyngeal Fibroma. Death Immediately Following the Operation. DR. ROSS HALL SKILLERN.

H. B., aged 14 years, was brought to me in consultation as a case of sarcoma of the inferior maxillary. Examination showed the left nares completely occluded by a granulating mass which bled profusely on the slightest manipulation with the sound. A copious, slightly fetid sero-sanguineous discharge was also present on the affected side. In the naso-pharynx a large smooth rounded mass hung down to the lower edge of the palatal folds, completely occluding the entire choanae. This condition had been present for more than a year, but in the last few weeks had become greatly augmented. Previous treatment had consisted in cauterization of the nasal portion which almost protruded from the nares. In all perhaps a dozen cauterizations were made. The profuse hemorrhages which followed these applications caused his physician to make the diagnosis sarcoma.

Present condition: Thin anemic boy. Asymmetry of face. Typical mouth breather. All upper teeth had become loose and fallen out. I advised immediate operation which the attending physician endorsed and was agreed to by the family. The patient was placed in the hospital and carefully prepared for operation on the following day.

Operation: Morphia, 1/6 gr. and atropia 1/200 gr. was administered hyperdermatically. An incision was made from the internal angle of the eye along the side of the nose to the median line below the left nostril. The hemorrhage was free but not profuse. After elevating the periosteum to the pyriform aperture and over the antrum a portion of the ascending process of the superior maxilla was resected until the mucosa of the nose was bared. The maxillary sinus was filled with a gelatinous substance in all probability a mucocele. The bone in this region was necrosed, apparently from pressure, as no sign of sarcomatous involvement was to be found. After incising the nasal mucosa the true nature of the tumor was apparent, as a large glistening white mass occupied the entire nasal chamber pushing the septum toward the opposite side but apparently lying free in the cavity, as no attachment could be found anteriorly. On passing the finger backward dense adhesions were felt in the spheno-ethmoidal region laterally. The index-finger of the other hand was inserted into the choana and it was noted that the attachment extended along the inferior surface of the body of the sphenoid. The patient's condition up to this time had been very good, heart 130 and breathing normal, no blood having escaped into the larynx. Dissection by means of the finger and a periosteal elevator finally loosened the attachment of the tumor, and it was removed entirely through the anterior opening. Considerable hemorrhage immediately followed the removal, but it was soon controlled by tampons. As we were about to insert the packing and suture the patient suddenly ceased breathing. He was quickly turned on the side, a mouth-gag inserted and the throat swabbed out, although he had not once coughed nor was cyanosis marked. Only faint spasmodic efforts to breathe were made, showing that the respiratory inhibition was central rather than peripheral. The heart was weaker, although regular and not accelerated. Hyperdermatics of atrophin and whiskey were given, and the sphincter was dilated but without influencing the respiration. A quick tracheotomy was performed and the trachea wiped out as far as the bifurcation; some clotted blood appeared on the gauze. Artificial respiration and oxygen were continued and although the lungs would not act automatically, nevertheless the heart continued even stronger than previously. No sign of cyanosis was present, the patient being pale. Artificial respiration was continued for about 50 minutes when the heart suddenly ceased to act. Critically reviewing this case, it is a difficult matter to arrive at the precise cause of death.

The preparation of the patient was faultless, the ether administered by an expert anesthetist (Dr. H. M. Goddard), and although the operation lasted nearly one hour and three quarters a trifle more than one can (¼ lb.) was used. No undue traumatism was caused in removing the growth and as far as we could judge by feeling it had not penetrated into the cranial cavity. The hemorrhage, while at times profuse was always quickly controlled. Considering these facts it was decided by those present (Dr. Geo. M. Coates and Dr. William Menah) that death was due to paralysis of the respiratory center from the hyperdermatic of morphia administered previous to the operation. This may have been furthered by the small amount of inspired blood together with the lack of oxygen the patient received while manipulations were being made in the choanae. There was no question that the reflexes were abolished at that time for not once did the patient cough or show any signs of strangulation. An autopsy might have thrown some light upon this question but unfortunately one was not permitted.

A Case of Myiosis Aurium Accompanying the Radical Mastoid Operation.

DR. GEO. M. COATES.

The following case is thought to be of sufficient interest to justify a brief report: L. H., 14 years old, is a student in the Pennsylvania Institution for the Blind in Philadelphia. When 4½ years old, following scarlet fever, he lost sight of both eyes and developed a chronic suppurative otitis media which in time destroyed the hearing of his right ear and so impaired that of the left that the loud spoken voice could only be heard at a few inches distance. He has been under my care for the last five years, during which time the discharge of pus has not materially decreased, for during vacation time in summer he is accustomed to go to his home in the country where he gets no treatment at all, and so loses what little improvement he has made during the winter.

A radical mastoid operation was proposed several times, although not urged on account of his blindness and the very little hearing-power remaining. It was always refused until this summer when symptoms of cholesteatoma became marked and consent to the operation was finally obtained. At the time of operation, which was done in the Pennsylvania Hospital, the mastoid process was found to be extensively excavated and a sinus had opened from the cavity of the antrum into the posterior wall of the external canal. Ossicles and tympanic membrane had long since disappeared and a thorough and careful, complete radical operation was done. The posterior incision was closed completely and the cavity packed through the meatus with plain sterile gauze. Aseptic technic was careful and painstaking throughout. As the boy made a good recovery from the ether and had a normal temperature, the packing was not removed until the third day. On removing this packing a very bad stench was apparent and some forty or fifty small maggots came away with the gauze or were washed out immediately afterwards. The ear was this time packed with iodoform gauze which was changed daily for a week and then omitted altogether and no more larvae were seen, the patient making an unevently recovery.

The patient had spent the summer on a farm and entered the hospital on Thursday, August 22, 1912, being operated upon on Friday, so that I had not seen him personally since the preceding June, until the day of operation.

The ear had been douched in the ward without any larvae being discovered. The eggs must certainly have been in the middle ear at the time of operation, having been deposited by the fly while he was in the country, and in spite of what seemed a thorough operation a large number of them remained to develop into the maggots. Where they could have been I am at a loss to know unless in the Eustachian tube and dislodged upward by the curetting, which was almost the last step of the operation before the ear was packed.

DISCUSSION.

Dr. Gleason: Larvae of domestic fly are often found in strange localities. I have seen living maggots in a normal auditory canal.

Dr. Levy B. Hirst: Maggots were found in a patient's ear the day following an outing in the country. He had taken a nap on the grass.

Dr. Skillern: Do flies give birth to living larvae? He once saw maggots protruding from the belly of a fly.

Dr. Coates: In answer to Dr. Skillern's question. There is the viviparous and ovaparous variety of fly, the former giving birth to living larvae, and the latter depositing the eggs in putrid material, which on the hatching of the eggs in a few hours sustains the young larvae. The Texis screw worm fly, or lucillia macillaria, belongs to the latter variety and according to the Bureau of Entomology, Department of Agriculture, was probably the cause of this case of myiosis.

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ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

ATROPHIC RHINITIS IN ITS HISTORICAL, ETIOLOGICAL AND HISTOLOGICAL ASPECTS.*

DR. JONATHAN WRIGHT, NEW YORK CITY.

The interest which has arisen among rhinologists to arrive at a better understanding of the lesions of atrophic rhinitis in their correlation with the clinical symptoms is the excuse for my including in this paper an exhaūsting but not an exhaustive review of its modern history.

The point of view from which I start is to attěmpt by a process of induction to lay before you and bring into prominence those facts in it which lead to the conclusion that there is some common underlying lesion which binds together the allied clinical phenomena of the different varieties of atrophic rhinitis and to indicate that affiliation with other lesions which points to the same conclusion. That lesion I believe to be a periostitis of the thin scroll bones—a common enough process, but a lesion in a unique situation. Nowhere else in the body have we thin plates of cancellous bone between two layers of fibrous periosteum. Nowhere else in the body have we thin sheets of cartilage between two layers of perichondrium. In hypertrophic rhinitis, or better in all chronic rhinitis, we have a periostitis. In all sinus affections we have a periostitis. These being the allied local lesions with which we have to do, this being the unique bone configuration with which we are confronted, I turn to the account of the work done on atrophic rhinitis chiefly in modern times. After that with your permission, I will take up some of the results of my own objective study of the histology of the lesion.

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*Read by title at the annual meeting of the American Laryngological Association, May, 1913.

HISTORY.

There is no doubt that the history of atrophic rhinitis may be traced back to the remotest antiquity in the history of civilization, especially that variety of it associated with crusts and a foul odor. It seems likely that the reference in the Talmud to a polyp in the nose causing a bad smell, to which I have referred elsewhere[1] is an indication of its occurrence among the early Jews. The Hindu Susruta spoke of it under the name of Putinaska, as one of the thirty-one diseases of the nose. While in the medicine of the Greeks I have noted no indication of the existence of ozena, as we understand it, there is a reference in Celsus to the fact that the Greeks themselves gave the name of ozena to the literature of medicine, and he recognized that "it is hardly possible to cure this disease." He recommended its treatment, in some cases, by the application of the actual cautery, but he also employed other methods. Galen recognized it, as indeed did the post-Galenic writers, the Arabians and the physicians of the Renaissance. It may be found spoken of by Fabricius ab Acquapendente, who modified the procedure of Celsus by inserting a metal speculum in the nose, and by putting the hot iron in that, which imparted heat to the tissues without actual cauterization. This modification was adopted by later writers.

However, it is impossible always to know just how closely ancient diagnosis and differentiation corresponded with our own. That in individual cases it must have been faulty, we realize from the fact that in quite modern times we are able to note the absence of a differentiation which has become essential to our present intelligent study of the disease. I therefore hasten on to that period.

In 1866, Weber,[2] who had devoted himself largely to the study of the ear, contributed an article to one of the reference handbooks of surgery on nasal disease, from which it is quite apparent that atrophic rhinitis as we know it—non-syphilitic—without the presence of a foreign body, was undifferentiated at this time.

Zaufal,[3] in 1874, claimed that the ozena present in some cases of catarrh is associated with a congenital deficiency in the development of the inferior turbinated bone. This idea that it is connected with a congenital bone-defect was many years subsequently (1898) expanded in the work of Meisser[4] to the conception that it is due to an abnormal wideness of the nasal fossae, which is congenital. Alexander quotes Sauvages[5] as having claimed, in 1763, that it is due to the nose being too narrow. Hopmann[6] again, in 1893, had claimed the nasal fossae are congenitally too short. As recently as 1908 he has reiterated[7] his belief in the shortening of the septum as an indication that a congenital conformation of the nasal fossae is the cause of ozena. Exactly how this condition referred to by Hopmann should have an influence on nasal affections is not very clear, nor is the idea attributed to Sauvages very suggestive, but the too great roominess of the nasal chambers, at first thought, would seem a more plausible explanation, as a greater volume of air contained in them would provide for the evaporation of a greater amount of moisture and so tend to crust-formation. But as a matter of fact, it soon appears on reflection that this rests upon erroneous conceptions. The air is a moving current, and there can be but little difference in the evaporation coefficient whether the same volume of air passes through a small chamber or a large one. In fact, so far as there is provision for evaporation the advantage lies with the normal nose as compared to the larger chambers supposedly attendant on the beginning of the atrophic process, inasmuch as the air current is more closely in contact with the mucosa and can carry away the moisture somewhat more rapidly. As a matter of fact the inception of these ideas rested upon a very insecure basis. Little has been learned of the etiology by observers using modern methods of examination and still less by students of nasal histology. The same may be said of the idea of Michel,[8] in 1876, that atrophic rhinitis is essentially a disease of the accessory sinuses. This is still a prominent feature in discussions on the etiology of accessory sinus disease. It also rested, especially at that time, upon insufficient differentiation. Indeed its prominence as an etiological factor in the minds of rhinologists of the present day may be said to be due to an inadequate separation of the various kinds of ozena from one another and to the inadequate separation of different kinds of atrophic processes in the nose from one another. Crusts may form from sinus disease as well as from an atrophy of the nasal mucosa. There may be an ozena and an atrophic process which has extended to the mucosa of the accessory sinuses. Elsewhere I have recently referred to the modern history of the accessory sinus disease in its relationship to atrophic rhinitis[9] and I will not refer to it here again except incidentally.

There is an atrophy of age and atrophy following nasal operations. As in almost every domain of medicine history here takes account of the differentiation of phenomena in the course of the discussion of theory and the acquisition of our knowledge of facts. Hartmann, in 1878,[10] as a result of post-mortem examinations had already refuted Michel's idea as to the genesis of ozena in the accessory sinuses. He was inclined to accept Zaufal's theory. Tissier, in 1894, claimed it to be a bone disease of the ethmoid labyrinth in the embryo and the infant. The accessory sinuses are thus affected in his view as a continuation of a congenital condition, the secretions forming a favorable medium for the growth of bacteria. Gerber, in 1900, examined the question of nasal anomalies in their relation to the etiology of ozena and came to the conclusion that the roominess of the fossae and a depressed nasal arch (chamaeprosopia and platyrrhinia) often combined with syphilis, are predisposing factors. In later years there has been a recrudescence of the belief that ozena is due to a necrosing ethmoiditis[13] and again the ethmoid and sphenoid cavities have been vigorously attacked.

In the early work of B. Fraenkel,[14] in 1876, may be noted the first attempt to separate cases of true ozena from those of syphilitic ozena. While he thus erected the typical atrophic rhinitis with ozena into a separate entity, he failed to indicate that it was dependent also upon a bone change, as is the ozena of a syphilitic nose. His idea that it was a specific change in the secretions was a natural prelude to the belief which soon arose that this depended upon some specific form of bacterial life. Loewenberg[15] described in 1885 a bacterium constantly found in the secretions of ozena and this has been many times confirmed by other observers since then. Klamman,[16] Thost,[17] Seifert,[18] Strauch,[19] Valentine,[20] Hajek,[21] Reimann,[22] Abel,[23] Struebling,[24] and others contributed to the bacteriology of ozena within a few years after Loewenberg's paper; but the etiological importance of these bacteria, in spite of much recent literature as to other germs, has not been accepted as preponderating in the causation of atrophic rhinitis, and it can not be said that bacteriology so far has materially elucidated the mystery of the etiology and pathology of the disease. These writers for the most part looked upon micro-organisms with a mental magnification borrowed from the high contagionist craze of the day. For them the bacterium was the primal factor in the disease. Naturally this left the atrophic bone-change even more completely unprovided for than did the subsequent sinus theory of

Gruenwald and his followers, to which I have referred as starting with Michel. Fraenkel divided nasal catarrhs into hyperplastic and atrophic, regarding the latter as a sequel of the former. He also admitted the influence of various dyscrasiae as etiological factors. More than thirty years later he had the satisfaction of reminding[25] his colleagues that this early classification is fundamentally to-day the basis of differentiation of intra-nasal inflammations. In 1879 Eugen Fraenkel[26] studied sections of the atrophic nasal mucosa under the microscope and noted changes in the epithelium, though he asserted that it is destroyed and replaced by other cells. He remarked on the few acinous glands to be observed. He believed there was always an underlying dyscrasia of tuberculosis or of syphilis. He believed there were always deep lesions of the mucosa and of the bone. In the same year Gottstein,[27] though believing in its systemic nature, recognized ozena as a constant symptom of that stage of a chronic rhinitis in which it has come to an atrophy of the mucosa and the glands in it. The vitiation of the secretions from this cause he proposed to treat by the use of intra-nasal tampons of cotton left in the nose for twenty-four hours or more. Hermann Krause,[28] in 1881, described microscopic appearances in two cases of ozena and noted the presence of evidences of fat and fatty acids in the secretions of the mucosa, fibrosis of the stroma and blood vessels, and the relative increase of lymphoid cells. The destruction of glands he believed to be due to limitation of the blood-supply and the fibrosis of the blood vessels. These ideas were many of them introduced in America by Bosworth in several excellent papers,[29] in 1882, and in his "Treatise of the Diseases of the Nose and Throat." He believed atrophic rhinitis with ozena was usually the sequence of a purulent rhinitis in childhood. Bruegelmann,[30] in 1884, looked upon the nature of ozena as a suppuration of the nasal turbinated bones. He thought the increased dimensions of the nasal chambers an anomaly of development, and he believed that this and a scrofulous diathesis are predisposing factors in the etiology.

Zuckerkandl brought the discussion to its more useful channels in refuting the fallacies of the theories dependent on a congenital bone-defect or abnormality, and in suggesting that the changes in the bone are apparently the result of an intra-vitam inflammatory process, but it was a number of years before this view became the prevailing one. Many papers were written in support of the view that it is due to a congenital conformation of the nasal fossae. These are reviewed in the paper of Meisser (l. c.) and the later one of Alexander. The paper of Cholewa and Cordes[31] is to be mentioned as claiming that the essential lesion is a bone lesion, but a peculiar one, not of an inflammatory nature. As for the changes observed in the mucous membrane itself, these have been variously described as primary and as secondary to a bone lesion by numerous observers, among whom we may name Habermann[32] in 1886, Schoenemann[33] in 1902, Oppikofer[34] in 1907 as representative of opinions expressed at isolated times. The whole question is exhaustively reviewed by Alexander.[35]

John N. Mackenzie,[36] in 1884, expressed the belief that there is always a hypertrophic stage to atrophic rhinitis. Moure[37] declared himself a sharer in the belief of Gottstein that the essential lesion in atrophic rhinitis lies in the glands. Habermann (l. c.) also accepted this view. The involvement of the serous and mucous glands is well established in present-day nasal histology, but it has never been generally accepted as a satisfactory exposition of the whole process or of its etiology.

Luc[38] and Bronner,[39] in 1887-8, again drew attention to the apparent association of ozena and accessory sinus disease. Gruenwald[40] advocated this idea in his book on nasal suppuration, and that other lesions also were the cause of it, such as adenoid vegetation, etc. Luc,[41] in 1888, reported three cases of tracheal ozena, and a discussion as to priority in the observation of the affection arose with Massei. Zarniko[42] and others asserted that tracheal ozena may exist without a nasal lesion. Potiquet[43] contributed a number of papers to the earlier discussions of atrophic rhinitis by modern rhinologists.

I have already referred to the literature of the microbian theories of the etiology of ozena. The similarity of the bacillus found by Loewenberg, Abel and Paulsen in ozenatous cases with the bacillus of Frisch, and of both with the bacillus of Friedlaender led to much discussion as to the connection of ozena, scleroma and pneumonia.[44] While most observers confirmed the early reports of various bacterial forms found in the secretions of ozena, no one was able to demonstrate the presence of any of them in the subepithelial tissue of the mucosa itself and some of the reputed specific forms were found in normal noses or in noses not the site of atrophic rhinitis. Perez[45] not only discovered a cocco-bacillus as the cause of ozena, but found it also in a dog, and, injected into rabbits, it caused gradual atrophy of the turbinated bones. He suggests that it is acquired by man from the dog. Hajek[46] who made investigations on the bacterial contents of the nose, expressed his belief that the organisms found in ozenatous cases had little or nothing to do with the etiology of the disease. He believed that atrophic rhinitis had always a preliminary stage of hypertrophy. In the discussion on his paper, in 1887, in which he asserted this and that the Friedlaender bacillus often found in the nose played a secondary part even in pneumonia, he was opposed by Weichselbaum, Paltauf and Roth.

Siebenmann,[47] who was a collaborator with Meisser in the examination of cranial form as a factor in the etiology of ozena, made a careful study of the histology of atrophic rhinitis, but he, as many other writers, laid a stress upon the specificity of the metaplasia of the epithelium of the surface which would not have been the case if such work had been controlled sufficiently by the examination of this element in normal noses and in other pathological conditions, since in adult life there is always much of it to be noted. Cozzolino[48] believed the lesion first begins as a keratosis of the surface epithelium and becomes secondarily bone disease. There was a tendency with many others, as with Rethi[49] for example, to consider the ozena as something specific and aside from the anatomical lesions of atrophic rhinitis.

I have noted that from time to time authors had incidentally remarked on the connection of tuberculosis and ozena, owing to their having a common basis in malnutrition. Theisen,[50] in 1904, made it the subject of a paper. Broeckaert[51] contributed to the study of its histology the expression of his opinion that the disease was due to a toxin produced by a parasyphilitic or a paratuberculous systemic infection. These terms came into use about this time, and their exact pathological significance is still enshrouded in mystery. Frese[52] was of the opinion that most of the cases are of syphilitic origin. Sobernheim,[53] in 1909, reported that seventeen cases of typical ozena gave a negative Wassermann reaction, adding another proof to the view that the nasal affection may exist without any syphilitic antecedent. A number of others testified to the same effect. It was spoken of as a larval tuberculosis.[54] Schoenemann,[55] in 1909, traced a connection between the occurrence of eczema and that of ozena. From time to time various authors have suggested that ozena is a trophoneurosis.[56]

Freitel[57] made an attempt to determine the age at which ozena first shows itself and concluded that in the great majority of cases it was in the school age of children that it developed, 4 to 14 years. In all treatises on the subject since the affection was first differentiated by B. Fraenkel, the preponderance of the female sex in the cases affected by it was noted.

The treatment of atrophic rhinitis, especially of its chief symptom, ozena, has been varied. Going back to the time of its differentiation, we have already noted that tampons were recommended by Gottstein, and in the earlier history of rhinology this was a common form of treatment for all nasal affections, the linen or other absorbent tampon being saturated with various medicaments. Cauterization, we have seen, was also recommended by the ancients for what they called ozena, and in 1884-5 it was recommended[58] again as a therapeutic agent in its modern differentiation. In most of the writers on the subject recommendation for treatment included thorough cleansing and the application subsequently of some stimulating medicament, like thymol, aristol, turpentine, ichthyol, etc. Braun, Laker and Demme[59] recommended (1891) vibratory massage. This was employed by others either by hand or by electrically driven machinery. Faradism was also used,[60] also the electrolytic application of chlorid of copper[61] and submucous electrolysis.[62] Dionisio[63] employed various forms of photo-therapy in ozena and in the same year (1903) Casassa[64] reported on the therapeutical use of radium.

Brindel[65] in 1902 inaugurated the treatment of ozena by the injection of paraffin under the atrophied mucosa and this method of treatment has persisted to the present time, it being strongly recommended by Hutter[66] ten years later. Broeckaert,[67] who adopted the idea promptly, subsequently supplemented it by more vigorous measures. It was practiced by Fliess[68] and by many other rhinologists for a time after this, until the report of an embolus of the retinal artery in two or three cases of the injection of paraffin in the skin of the nose discouraged for a while frequent resort to it. On the strength of his belief that atrophic rhinitis with ozena was the result of a disease of those cavities, Broeckaert,[69] in 1905, in addition to the use of paraffin proposed to operate radically on the ethmoidal sinuses and to curette the sphenoid. He removed the middle turbinate, allowing the inferior to remain, reinforcing it with paraffin injections and injections of it also into the septal walls and floor of the nose. He proposed also to destroy the nasosinusal wall of the antrum, but not to curette the latter unless it was diseased. He claimed the injection of paraffin was efficient not only as a prothesis filling out the large spaces, but as a stimulant modifying the nutrition of the mucosa. Guyot[70] employed suction of the nasal chambers by mechanical methods in the treatment of ozena. A number of cases were treated with injection of antidiphthertic serum because diphtheroid bacilli were found in the crusts chiefly by Italians.[71] Skillern and Holmes[72] used vaccines made from the pure culture of the Abel bacillus. Emulsions of the culture of the lactic acid bacillus have been used by many in the treatment of ozena.[74] Foy,[75] in 1911, claimed considerable benefit can be attained by the patients being taught to breathe persistently and properly through the nose. Ozena has been treated with hot air, dry or moist.[76]

In the January number of Semon's *Centralblatt fuer Laryngologie,* 1912, there is a very valuable review of the literature of ozena during the years 1909, 1910, 1911, by Alexander. Among the points to which he gives prominence is the inequality in the distribution of cases geographically, racially and socially, its incidences as to sex and age. He drew attention to the fact that while the Wassermann reaction in his own experience and in that of others had given negative results in cases of ozena, he had himself seen a typical case of ozena, the offspring of a syphilitic father, the sister of a congenitally syphilitic brother, and in her case the Wassermann reaction was also negative. He also drew attention to the fact that while ozenatous subjects rarely contract syphilis, such cases have been reported by Fraenkel and Sobernheim (l. c.) and others, and that the question of the relationship of true ozena to syphilis is not by any means settled. It may be remarked that the subject is much embarrassed by the confusion which still reigns as to the clinical differentiation of the cases. With syphilitic ozena on the one hand and atrophic rhinitis on the other, without crusts or odor, it is difficult for an author to keep constantly in view the typical cases of atrophic rhinitis with ozena. The confusion is increased by the introduction of the consideration of accessory sinus disease attended by intra-nasal crust formation. In this excellent review it can be plainly seen that with the exception of the therapy, which is always new, optimistic and futile, there has been scarcely a question raised in the literature of the subject during the three-year period with which it is concerned that had not been thoroughly discussed in the former three decades in discussions of the phenomena presented by ozena.

ETIOLOGY.

Most modern observers who have devoted themselves to the histology of the lesions of atrophic rhinitis believe it is primarily a bone disease. In the consideration of the etiology various predisposing factors have been urged, some of them with considerable plausibility, others with none. General systemic malnutrition in children, sometimes dependent on syphilis, seems warranted from the number of cases observable in this class often seen in two or three children of the same parents. Sex quite evidentally is a determining factor, as a very large majority of the cases occur in females. Puberty also is clinically observed to have a determining influence on the advent of the symptoms.

These factors are observable in the apparent etiology of those cases of chronic rhinitis with crust-formation and the typical ozenic odor. In regard to the latter, while we speak of a typical ozenic odor it seems probable, from the state of opinion as to the bacteriology of the disease, that there is no specificity about it. Large numbers of bacterial forms, swarming in a lipo-proteid excretion of the mucous surfaces, set up chemical changes in which the volatile and non-volatile fat derivatives are concerned, which give rise to the odor.

While space forbids a discussion of the many theories advanced in regard to the etiology, it may be well to say that syphilis, long regarded as an etiological factor from the point of view of heredity has recently been investigated in its relationship to ozena by the Wassermann reaction. Negative results were almost uniformly obtained when complement fixation was tested for in the serum of the blood of ozenatous subjects. How far this can be regarded as conclusive in negation of the idea of a syphilitic hereditary factor in the etiology of true ozena it is too early yet to decide.

Excluding the cases of active tertiary nasal syphilis, as we do in modern rhinology in speaking of ozena, there is little warrant for the belief that hereditary syphilis has more to do with the etiology of atrophic rhinitis than that the syphilitic dyscrasia, like the tuberculous dyscrasia, is the cause of a lowered state of general vitality. Like tuberculosis, atrophic rhinitis is the disease of poverty. It occurs in the well-to-do just as phthisis does, but it is a disease of malnutrition, the usual cause of which, as we know, is poverty.

There is an affiliation of atrophic rhinitis with accessory sinus disease by virtue of the fact that the process itself occasionally extends to the mucosa of these cavities. There are also certain cases in which a chronic discharge from the posterior ethmoidal and sphenoidal sinuses exists with crust formation. In the former category of cases surgical treatment of the sinus accomplishes nothing, in the latter category of cases eradication of the sinus affection cures the ozena. In the majority of cases of atrophic rhinitis with ozena the sinuses are not involved in any way, even in advanced stages. Frequently the openings of the sphenoidal sinus can be perceived by anterior rhinoscopy, owing to advanced atrophy, and the mucous membrane may be seen to be free of crust or other discharge.

Atrophic rhinitis sometimes exists in one nostril, when there is marked deviation of the septum. The concavity on the one side shows abundant crusts and an atrophic mucosa. Straightening of the septum regularly cures the condition. Atrophic rhinitis not infrequently follows extensive operative destruction of intra-nasal structure. These undisputed phenomena lend some plausibility to the theories and observations advancing, as an etiological predisposing factor, the congenital roominess of the nasal chambers. The arguments and facts usually adduced in support of such theories have not sufficed to convince the majority of rhinological observers of their tenability. Finally a certain amount of atrophy, without crusts, is the physiological accompaniment of old age. There is plainly a shrinking of both bone and mucosa.

There is hardly any histological lesion which could serve as a common cause for changes in the mucosa of all these cases except that of a bone lesion which has interfered with the nutrition of the soft parts. The bone itself is affected in them all, and while there is no satisfactory evidence in the bone itself of inflammatory action, the process is manifestly associated with a pre-existing chronic inflammation of the mucosa in a sufficient number to suppose that in these at least the bone atrophy is due to it. An analagous bone lesion may be supposed to exist in the other cases. It must be confessed, after all is said, that the etiology and even the succession of histological changes is far from satisfactorily understood or accurately known.

PATHOLOGY.

In this form of nasal inflammation the epithelial metaplasia is more marked than in the hypertrophic form and it is constantly present. Even in fairly normal nasal chambers the cylindrical epithelium is in places frequently replaced by flattened cells. In atrophic rhinitis this is universal. Yet so far as I know there is no stickle cell-formation such as is sometimes seen in the epithelial metaplasia of other morbid processes. There is a tendency to cornification of the surface layers.

There is beneath the epithelium an infiltration of the stroma with a relatively much increased number of round cells. These are marked around the ducts of the acinous glands. There is a steady encroachment on the epithelial structures of the glands by these round cells and a lowly organized fibrous connective tissue which finally all but destroys all traces of glandular structure. The same may be said for the blood vessels. Whether cavernous sinuses in these cases have ever been much developed at puberty or not is a question. At any rate the blood vessel walls have been to a large extent obliterated by the fibrous and the round-cell infiltration. That in this process of cell degeneration there is the production of considerable fatty detritus is probably true, but to the extent one would infer from the accounts of some observers is certainly not my experience. This proteid decomposition evidently finds its way to the surface with the copious discharge of serum which takes the place of the normal viscid fluid of the glands, and there its rapid evaporation leaves behind in the form of crusts a lipoid proteid precipitate which rapidly ferments and is split up into fatty acids by various bacteria. A large number of these have been found and several have been described as specific in the disease, but neither the bacilli of Loewenberg, Perez, Pes-Gradenigo, nor the diphtheroid bacillus, all of which have been urged as etiological factors, have been accepted as of any significance in the causation of the lesions. It seems probable that in the sense that there is an antecedent hyperplasia of the periosteum in atrophic rhinitis, we may say that hypertrophy is followed by atrophy in certain cases of nasal inflammation, but it seems quite certain that while this pre-existing periosteal hyperplasia may be present in the larger number of cases of typical atrophic rhinitis with ozena, this is the only element in the mucosa which is affected by preliminary hyperplasia. That this is always affected primarily must also be acknowledged as more or less hypothetical. Nevertheless the most significant change in structure is the thickening of the periosteal layer. Inasmuch as the distribution of nutrient arteries to bone and to mucosa lie in this element of the mucosa, inasmuch as it seems to be a fibrosis which ultimately destroys the glands and the blood vessels of the mucosa itself, it is a fair conjecture that it is in the periosteum and the perichondrium—for the septal cartilage also becomes thin and even in places absorbed—we must seek for the root of the changes which give this nasal disease unique characteristics.

The histological features of the disease seem to justify us in calling it a fibrosis, but the clinical features which accompany them justify us rather in calling it a mystery. There is no analogue to it elsewhere in the body. This gives us a clue to its essential nature. There is no other region in the body where we have a very thin plate of bone covered on both sides by a vascular secreting mucous membrane and separated from the bone on each side by a thin layer of periosteum which carries its nutrient blood-vessels. Often present in early childhood, associated with puberty in women, the symptoms ceasing for the most part after middle life, not beginning, except in the rarest cases, after adolescence, apparently not necessarily preceded by a condition of chronic inflammation or by hypertrophy, conceiving of it as initially a fibrosis of the layers of connective tissue next the bone and cartilage is a matter of some difficulty,—yet, after all, that seems the most reasonable hypothesis purely from a histological standpoint.

In order to understand the essential lesions of the stroma of the mucous membrane in atrophic rhinitis, I must repeat somewhat the remarks I have made in a recent series[77] of articles on the contractile elements in the connective tissue.

Looking for the first time at the picture presented by sections of the nasal mucosa of animals, stained by the Weigert formula or one of its modifications, the observer is struck with the abundance of elastic fibers. Their profusion at first seems not to be more pronounced, on the average, in one locality than in another, but it soon becomes evident that, aside from their great abundance in the walls of the large blood-vessels, the most constant and the most richly supplied locality is the periosteum and the deeper layers of the stroma intimately associated with it. Thick interlacing bundles are always demonstrable, running, in an irregular way, parallel with the planes of the bone. Everywhere the blue-black threads run through the middle layers of the stroma, always either parallel or obliquely to the surface. Nearly always demonstrable is a special layer of fibers situated in the stroma just under the epithelium at varying distances from it, but in such relation to it and in such arrangement that one cannot fail to perceive that it subserves a special physiological need, somewhat apart from the general tonicity the widely scattered fibers elsewhere would give the mucosa.

The persistence of this layer of wavy fibers just under the epithelial line is not infrequently noted in a mucosa considerably altered by hypertrophy. It is a layer indefinite in extent and somewhat inconstantly seen in the normal mucosa in the human infant and in animals. It is well to draw attention to the fact that never in the free stroma do the elastic fibers run in planes vertical to the surface or vertical to the periosteum, but always obliquely to them, except for the sub-epithelial fibers just spoken of, and the elastic fibers of the periosteum itself which run in more or less horizontal directions in relation to the surface and the bone.

Recently an article by Duerck[78] has drawn attention to straight telegraph-wire like fibers revealed in connective tissue generally and in arterial walls by some of the Weigert stains for nerve sheath demonstrations. He seems to think these had not been previously demonstrated in the walls of the arteries. While they may not have been especially emphasized in the work of Koelliker and Ebner, from which he quotes, they certainly are a more or less familiar phenomenon to histologists and may be demonstrated with the hemotoxylon-resorcin stain as modified by Hart. It is not unusual to see these fibers, or fibers at least morphologically similar to them, in the connective tissue of turbinated bodies of infants, and they are seen also in those of the monkey.

Breugelman[79] who used the 'hemotoxylon eisenlack' stain for sections of the penis also demonstrated them there. We may imagine they furnish in the walls of the arteries and elsewhere that form of elasticity lent to a lady's corset by the whalebone stays, but it is not at all certain that their straightness, their "telegraph wire" appearance may not be due to their being ordinary elastic wavy fibers stretched out straight by traction or by virtue of their position.

The distribution of elastic tissue around the gland acini is not very marked, or apparently in such a mechanical arrangement as to work in the most efficient manner in expelling the contents. While it is true that in some cases it is demonstrable in the material from animals, such is not uniformly the case. One gains the impression that such expulsion of mucus from the glands as may occur from the contractile action of the tissues, arises more from the general elasticity of the stroma than from a special network around the glands. Although the description of Schiefferdecker[80] is not very accurate, it seems to me, I repeat what he says. Backward from the *vestibuli nasi* "with the beginning of the glands, the elastic fibers, especially in the deeper parts of the stroma, become more slender, but are nevertheless still thick; they surround the glands and, singular to say, reach a greater thickness exactly at those places which lie between the epithelium and the glands, so that this part appears as the characteristic continuation of the network hitherto penetrating the whole stroma."* Now while this may be the character of the elastic fiber arrangement bordering on the vestibule, in the deeper portions of the nose such is not the case. The same author subsequently speaks of the glands of the deeper parts of the nose being surrounded by a membrana propria. It is true, as will subsequently appear in a discussion of pathological conditions, that one can observe appearances, as if the base of the gland-cells exuded a homogeneous substance which forms a sort of an incomplete and irregular hull to a gland acinus; but it is very difficult to be sure that this, in the material from animals, is not simply a slightly more dense arrangement of connective-tissue fibrils. Among these, as I have said, may frequently be traced the elastic fiber of the stroma, but there is no specific peri-glandular network of fibers taking the Weigert stain, nor is there anything which can be called a membrana propria.

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*Schiefferdecker has had the same experience with the apparent capriciousness of elastic tissue stains, and he also is not disposed to trust the results of tinctorial reactions. It seems to me we are justified in supposing that there are variations of chemical and tinctorial reactions which do not influence elasticity, but it is also possible that a functional demand may temporarily effect a chemical and hence a tinctorial change and also

In the walls of the nasal blood-vessels I am not aware there is any exceptional feature to the distribution of the elastic fiber. In the endothelium of the single-walled capillary the occasional appearance of a purple stain may be thought to argue for an elasticity which is more evident, judging from the stains, as the thickness of the walls increases. The intima of the venous sinuses is very thick, and the longitudinal elastic fibers always stand out as sharp landmarks in sections of the erectile tissue colored with Weigert's stain. It also mingles freely with the external coats of the venous sinuses. The arterial vessels present no especial feature in this regard.

What I wish to dwell on especially is the condition of the elastic fiber itself in the presumably normal material, as distinguished from the elastic fiber and the elastin noted in the material from the nasal mucosa of adults removed in the course of clinical work. Normally the elastic fiber is indefinitely long, slender, branching, usually with finely drawn-out ends interlacing everywhere with other fibers. Just where and how they are anchored to other cells is not very clear. The transverse measurement of the elastic fiber varies greatly in different localities. In the nasal mucosa it is of smaller caliber as seen in the infant and in the monkey. It ranges from a hardly perceptible line, as viewed with the o. im. 1/12 obj., up to perhaps two microns. Koelliker, speaking of the elastic

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a change in elasticity. In other words, elasticity being an expression of energy, it may vary in the tissues, just as muscular energy varies without betraying itself in structure to our powers of vision. This falls in very well with a recent remark of von Hansemann (Deszendenz und Pathologie, Berlin, 1909) whose ideas on the mutability of tissue-form for more than a decade have been known under the name of "anaplasia." "In man slightly differentiated connective tissue is extraordinarily variable in its occurrence and everywhere adapts itself in form and position to temporary demands made by normal and pathological states."

fiber in general, says it ranges up to six microns in diameter or even to twice or thrice that. In the nose when it exceeds two or three microns it is usually associated in the loose stroma with pathological conditions and itself presents various departures from what I conceive is its normal condition. In my notes I have spoken of this normal condition as "efficient looking," meaning thereby they were arranged in such a way as, supposing they were capable of contraction, their shortening would lead to a condensation of the tissues in which they lie. This was to distinguish them from swollen fibers with abrupt ends, broken into sections, granular, sometimes betraying their former state of continuity only by a row of granules into which they had disintegrated in the course of disease,—perhaps at times they break up into this state of discontinuity as a result of the technic of fixation, hardening and staining. Great clouds of elastin granules are thus seen crowding some fields. In the normal mucosa when such clouds exist they are more or less homogeneous, the granules for the most part not being resolved by the highest powers of the microscope.

So far as my own convictions go, there can scarcely be a doubt of the origin of the elastin and the elastic fiber as an exudate of the cells in adult tissue, even when the fiber is efficient looking. In normal tissue it is organized into a fiber by a precisely working machine, but when the stimulus is over-great, as in hypertrophic conditions, the fibers are thick and swollen, with abrupt ends, often broken into sections or a row of granules, but frequently existing as a cloud of coarsely granular material in the stroma. Such granules are seen inside of cells, especially at the free surface of gland cells. Up to a certain point this disorderly condition of the elastin corresponds to the extent and the degree of the hypertrophy, and then a change sets in.

I cannot here enter into an exhaustive discussion of all the changes in the nasal mucosa supervening upon an hypertrophic rhinitis. I must, however, trace in outline the course of events which can be gathered only from a composite mental impression of the moving picture of morbid processes after years of observation. The static conditions conventionally looked upon as the "pathology" of disease is a sterile way of studying vital problems. Morbid tissue, like normal tissue, is a living thing, moving along the path in which it is guided by the laws of living matter and by, in this locality, the preponderating influence of the environment. At hardly any given moment is the condition exactly what it subsequently becomes. The only constant thing is change. I am compelled then, in attempting to place the changes in the so-called elastin in the proper light, to be a little discursive. There is a growing tendency, for which we must be profoundly grateful, to treat of pathology not as something dead and immovable, but as of something living and mobile, a process and not a state. In chronic inflammation of the nasal mucosa the static conception of it is entirely unintelligible. We must conceive of it as a process in which changes are slowly advancing as the result of age, heredity and environment.

There may be changes in the nasal mucosa as the result of a chronic rhinitis which has not perceptibly increased or diminished the bulk of the tissue. Hypertrophy and atrophy are gross and inexact terms, but they are so fixed in rhinological usage that it is impossible, at least inconvenient, to break away from them. So notwithstanding the protest I make in what I have to say it will be more convenient to start from a basis furnished by some of the conventional divisions of atrophic rhinitis, of no value in themselves except as indicating some of the causes underlying the process.

It often happens that atrophy supervenes upon states of the mucosa whose condition of chronic inflammation has caused symptoms so trifling as not to betray it. It is occasionally the case that edematous polypi (especially in asthmatic and hay-fever cases) spring from a mucosa in which previous inflammatory changes have been insignificant, and the same may be said of atrophic rhinitis. Nevertheless it is true that a periosteal lesion without any antecedent hypertrophy of the mucosa may be the first step in the pathological process which leads to an atrophic rhinitis. Such is a fact, I believe, in those ozenic cases, not too common now that a keener differentiation of diagnosis is exercised, which we recognize as having begun in early childhood, when there may have been a half-suppressed syphilitic inheritance, or some other systemic deep-lying vice. This also frequently applies to those cases whose symptoms of ozena, with the characteristic crusts and odor, date back to puberty only. There is another class of cases, pseudo-ozenic we may call them, which have foul decomposing crusts without the specific odor, and associated with sinus suppuration. In both these categories there is an antecedent periosteal lesion. In the first, the true ozenic cases, there is a periosteal lesion due to some unknown systemic cause which has blocked the nutrient arteries of the superjacent soft parts. Such is also the condition *mutatis mutandis* in the other category just mentioned.

The suppurative inflammation of the mucosa of the sinuses has spread through the periosteum to the bone. One bone change we may say is endogenic, the other is exogenic, and the results (true ozena and pseudo-ozena) may be differentiated by careful clinical observation. There is still a third class of atrophy in addition to that succeeding hypertrophy. I refer to the atrophy of age. The bone shrinks, the epithelium is atypical, the venous sinuses are fewer and smaller, the racemose mucous glands are suppressed, while from the single-tubed serous glands of Bowman in the upper regions of the nose and from direct transudation a watery fluid flows and drips, often so inopportunely, from the nose of age.

There is always some edema or serous infiltration accompanying atrophy even in the very last stages. In the end the connective tissue cells have taken on an embryonic type with branching processes, and such mesh of fibrils as still exist is crowded with the small leucocytes and their naked nuclei. At this stage the elastic tissue in the walls of the radical arteries and veins, even that of the intima, has become disorganized and partially absorbed. The glands, all but perhaps some traces of their ducts, have disappeared and the stroma of the turbinates is little better than granulation tissue.

To summarize then: In the newborn infant the elastin material exists in the nasal mucosa, so far as selective stains reveal its presence, in the form of a fine net-work of fiber and no coarse granular material or swollen fibers. Later in life the latter appear and in hypertrophy are prominent in the landscape of the sections. As changes go on to atrophy of any kind or to edema, the useless non-efficient material is absorbed first and the fine fibers last, perhaps themselves passing through a stage of disorganization. I think there can be no doubt that in adult tissue the granular elastin has an intra-cellular origin, and it is probable that even some of it thrown out in inflammation may be organized into efficient fibers, but for the most part this attempt at organization is incomplete and imperfect. Like the callus thrown out from bone, it must be looked upon as a process of repair and regeneration. The material carries with it imperfectly the heredity of early embryonic life, the tendency to tissue-formation. It is quite impossible to account for the appearances on the supposition that all the disorganized material has had its origin in the degeneration of pre-existing normal fibrils.

In taking up the question of the presence of the smooth muscle cell in the stroma of the nasal mucosa, so interesting from many points of view of a general nature, the special histological questions concerning it have hitherto aroused interest only in one respect. Is it a fact that separate smooth muscle cells or limited bundles of cells lie free in the loose stroma of the erectile tissue of the turbinate bodies, or are they always closely connected with the coats of the large blood-vessels? Zuckerkandl[81] and Herzfeld[82] maintain the latter view, and their position may be regarded as summed up in the words of Herzfeld: "The erectile tissue of the nasal mucosa is rich in organic musculature. This, however, does not lie free in the connective tissue of the erectile bodies, but forms as in all other parts of the body the middle tunic of the arteries and veins, and lies closely pressed around the walls of the lacunae of the erectile tissue."

Students of rhinology became familiar with the view of Zuckerkandl, which is of the same tenor, many years ago. While muscle cells had been described in the stroma of erectile tissue elsewhere, the *corpus cavernosum* of the penis, the nipples, etc., the scalp, the skin of many animals, for many years no one ventured to assert in the face of Zuckerkandl's authority their presence in the stroma of the nasal erectile bodies. I had been indisposed to accept the views of Zuckerkandl chiefly for physiological reasons and from the clinical study of the nasal mucosa. Owing to the difficulties of differentiation and the unsatisfactory technic in vogue before Mallory's recent introduction of his connective tissue stains have added so much to the more exact study of cellular relations, it was difficult to acquire sufficient assurance to refuse an assent to an authority so weighty as that of Zuckerkandl. It is true that Schiefferdecker[83] has asserted of late years that muscle fibers do lie free in the stroma, but the confirmation of the assertion was a difficult matter, and it still remains a disputable matter. The difficulties are not wholly technical nor entirely those of personal opinion, but, in the question are involved some fundamental principles of histology, of embryogenesis and of other matters of by no means inconsiderable interest in general biology.

The relation of the smooth muscle cell to the racemose glands in the nasal mucosa differs somewhat from that which obtains in the skin since, according to Koelliker,[84] in the connective tissue net-work around the skin glands, there is mingled with it elastic fibers, fat cells and often muscle cells. It is true that muscle cells can often be made out in connection with the racemose glands of the mucosa, but in health with regularity only around the ducts of the glands, and here they are seen even closer up under the surface epithelium at their mouths,—the only situation immediately under the surface epithelium, so far as I have been able to observe, where the muscle cell can be demonstrated in the nasal mucosa. We usually have the mouth of the duct at the bottom of a deep sulcus in the mucosa, so that the muscle cell as a matter of fact does not even here usually approach very closely to the surface. Further it may be noted in this connection that frequently blood-vessels of considerable caliber (fifty microns estimated in one observation in my notes) have no encircling muscle coat when they lie close under the surface epithelium. It will be remembered that I described as normally existing close under the epithelium a special horizontal layer of elastic fibers, and we may readily believe that these are more serviceable in obtaining a smooth surface on contraction than muscle fibers would be in that situation, while deeper in the stroma a musculature is required to supplement the obliquely arranged elastic fibers. For efficiency in respiration and in olfaction a smooth nasal surface would be very desirable, but for proper drainage it is imperative. I shall not attempt a complete description of the musculature of the blood-vessels further than to say the deep veins and sinuses and deep vessels of even very small caliber are supplied with well-developed muscle cells in their coats, both longitudinal and transverse; in the superficial vessels, as I have just intimated, the character of the coats is that of large and small capillaries.

One cannot have constantly before one's eyes the difficulty of distinguishing the indifferent cell from the differentiated muscle cell in the connective tissue without the growth of a conviction that out of the former may arise the latter in answer to some functional demand, increasing in importance as one approaches the vascular layers. In another respect it may quite as rationally, even from my observations, be argued that the muscle cells have split off primarily from those of the vessel coats, by mitosis, in the development of the bulk of the erectile bodies which takes place at puberty. This might easily occur and the muscle cells might be isolated at considerable distances by the proliferation and interposition of the different connective tissue cells of the loose stroma. In the calf, and in the human infant before birth, especially in the latter where the embryonic type of cell prevails, the isolation of the muscle cell, if I am to trust my own notes, is even more conclusively to be observed than in the human adult. To be sure there is no reason why the genesis of the stroma muscle cells may not be ascribed to both sources, i. e., to their original embryonic differentiation in the tissue and to their derivation under certain conditions from the musculature of the blood vessels. The question of the mutation of the indifferent adult connective tissue cell into a muscle cell is quite another matter, and will find little support from some observers. Nevertheless, while I admit that my observations are susceptible of an orthodox interpretation in this instance, I am disposed to exclude the possibility of such a metamorphosis, especially in the disturbances of chronic inflammation. In other articles[85] I have dwelt sufficiently upon the evidence of a metamorphosis of epithelial cells into cells exhibiting the fibrils of connective tissue under the stimuli of chronic inflammation. Here, as in the tonsils, chronic inflammation certainly induces an appearance of metaplasia which has forced itself on my attention. The branching connective tissue cell is much more closely related embryologically to the muscle cell than to the epithelial cell, and how much resistance this view of their functional and morphological mutability may receive I do not know.

This brings me to the fate of the smooth muscle-cell in plainly pathological states of the nasal mucosa. I have explained at great length the difficulty one must experience in saying where normal nasal structure in the adult becomes abnormal. A very wide neutral territory must be pictured as existing between the two. With the elastic tissue we have seen that when we emerge out of that neutral debatable strip into the clearly pathological domains of edematous infiltration and of atrophic change, we have found a very marked diminution not only in the efficient coaptation of the elastic granules and the configuration of the fibers which occurs early in the course of hyperplastic change, but we have found a marked diminution in the quantity of elastin, organized and disorganized, everywhere in the tissue. Clinically, in the viscid mucus which clogs the gland acini in atrophic rhinitis, we recognize an increased demand for the function of an actively contracting cell around the acinus. Comparing sections differently stained of the same tissue in atrophic rhinitis we at once note in the penultimate stage that the muscle cells have offered a markedly greater resistance to degeneration and absorption than has the elastic fiber. I have pointed out that in the normal tissue the smooth muscle cell, or something resembling it, is seen around the mouth of the racemose gland ducts but not around the acinus. In the primary changes in the glands in the course of chronic hypertrophy the muscle cell is noted also wrapped around the acini in such a way as to suggest that it is there in answer to a functional demand for the expulsion of a thickened mucus, or possibly to take the place of the elastic tissue which has ceased in the stroma to transmit its pressure to the glandular structures. Passing on to fairly well advanced atrophic conditions, stages in which there has been marked destruction of the venous sinuses and the glands by the encroachment of low-grade fibrous tissue and the obliteration of these structures, we note that the muscle cell in the walls of the arterioles and venous sinuses most affected is assuming the irregular nucleus form and branching cell body of the indifferent connective tissue cell. At least, from my point of view this is what seems to take place, though I cannot deny the validity of the description which narrates the history of the process in another fashion, viz., that this indifferent connective tissue cell replaces the muscle cell.

A careful study of the cell forms in the stroma of these moderately advanced cases of atrophy in comparison with hypertrophy will reveal comparatively very many more cells, entirely isolated from the neighborhood of any blood-vessel, which have assumed or preserved the morphology of the smooth muscle cell than in normal or hypertrophic mucosa. It is true, a perfect picture of the muscle cell form is not obtained in the technic I have used, and the criticism is unavoidable that pressure has moulded indifferent connective tissue cells into the rounded ribbon or spindle-like form of the muscle cell with a cylindrical nucleus; but I am sure if they were wound around a blood-vessel there would be no hesitation on the part of any histologist in classifying them as smooth muscle cells. In the later or last stage of atrophy of the mucosa all muscle cell forms have disappeared, the stroma has been reduced almost to the condition of granulation tissue made up of round cells in a feeble mesh of star-shaped branching cells with long processes, resembling the embryonic type of cell, and numbers of single-walled capillaries.

The structural changes wrought in the mucosa are evidenced in the vitiation of the secretions. The absorption of bone and cartilage are responsible for a change in the external configuration of the nose when the disease has begun in early childhood, before the facial bones are fully developed. Whether it has begun in childhood or at puberty, the roominess of the nasal chambers is dependent upon atrophy of the scroll bones and of the mucosa covering them.

How to account for the disappearance of the crusts and the secretions in those cases in which it occurs after middle life, remains a subject for histological research. A restoration of the glands and blood-vessels anatomically seems biologically improbable, yet there is a return to a secretion on the surface of such a nature that its evaporation is not rapid enough to prevent it from carrying away with it those non-volatile ingredients which formerly were left behind as crusts of dried secretion.

The atrophy of age is of the same structural nature, so far as the glands and blood-vessels and the periosteum are concerned, and it seems probable that in those cases which recover from their terrible affliction of foul-smelling nasal crusts, the senile stage of the mucosa is reached and its condition suffices to remove the trouble. In this view then we may believe that a fibrosis of unknown origin in the periosteum and perichondrium induces, by shutting off the proper nutrition of the tissues, a state of vicious lipoid-proteid metabolism in the mucosa, the waste products of which washed out with the serum and lymph of the tissues produce the crusts on the surface. These vary with the concentration of the solid constituents of the secretions. Sometimes they are not sufficiently concentrated to remain as a deposit on the surface. We may thus account for cases of atrophy without crusts or excessive odor. The approach of age slows down the activity of all metabolic processes and tends thus automatically to cure the ozena of atrophic rhinitis and leave behind only the structural atrophy. I am fully aware, at the present state of our knowledge, how likely this hypothesis is to prove insufficient on critical analysis or even erroneous when more complete objective knowledge is attained.

To summarize the histological pathology of atrophic rhinitis, we may say that owing either to antecedent intra-nasal inflammation, or to a constitutional dyscrasia, or to the physiological change of age, or to all three, thickening of the fibrous elements in the periosteum or perichondrium is followed by consequences which are manifested through the effects of local malnutrition due to interference with the blood and perhaps the lymph supply of the mucous membrane and the bone it covers. These are: 1. The metaplasia and cornification of the surface epithelium. 2. Round-cell infiltration. 3. Destruction of the blood vessels. 4. Destruction of the glands. 5. Destruction of the elastic fibers. 6. Absorption of the bone, especially of the inferior turbinate. 7. Destruction of the smooth muscle fibers in the stroma. 8. These structures, to some extent, replaced by round-cell infiltration and by lowly organized fibrous connective tissue sometimes approaching the embryonic type. 9. While these changes are going on there is excretion or transudation to the surface of lipo-proteids, derived from tissue-waste and perverted gland function, which form a stinking, viscid secretion and crusts in which bacteria plentifully multiply. 10. Finally, this destructive metabolism ceases with the advent of old age. The foul secretions and crusts disappear, and the surface is moistened by a serous exudate which dilutes the remaining gland secretion sufficiently to secure its drainage. Thus nature brings about a cure difficult or impossible for man to accomplish.

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COMPLICATIONS OF THE OPERATION FOR REMOVAL OF TONSILS.*

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I have given my paper the above title in order to embrace all the procedures that are employed in the excision of diseased or enlarged tonsils. The removal of tonsils has become such an every day matter-of-fact operation that the general profession and the laity have grown to look upon tonsillectomy as a trivial affair, a simple procedure that has no danger, and that may be performed by any one. It seems, therefore, that it is adequate time for us to be considering our bearings and inquire if this operation be so simple as many seem to consider it, and whether it be devoid of serious danger to the welfare and life of the patient. It seems to me that it is wise for us at this time to turn our attention from the technic and the favorable issue of excision of the tonsils to the consideration of its complications and ascertain, if possible, the methods to avoid them. We are all more inclined to narrate and publish our own successful issues in medicine and surgery than our unfavorable ones, which fact, no doubt, accounts for the small number of complications of tonsillectomy reported in the literature. When one sees, hears, and occasionally reads of the unfortunate complications which ensue subsequent to the excision of tonsils, we wish it were considered the duty of every operator to report the complications which occur in his tonsillar surgery. In a careful review of this subject, one is impressed with the small number of complications, other than hemorrhage, that are reported. Several excellent papers have been published on the complications of tonsillectomy, most of them treating of one particular type of complication and referring to others. It will be my aim in this paper to collate all types of complications that may arise in connection with this operation, complications that have been reported in the literature accessible to my research. I shall also report in detail some of the complications which it has been my misfortune to encounter. Those cases in which complications ensue in conjoint tonsillar and adenoid operations are not reported, as frequently the complication is probably as much the result of the adenotomy as of the tonsillectomy. Neither should we consider the rather too frequent death from local or general anesthesia during tonsillectomy as a complication of this operation.

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*Read at the meeting of the American Laryngological Association, Atlantic City, May 11, 1912.

Hemorrhage: The most frequent and most dreaded complication of tonsillectomy is post-operative hemorrhage. Hemorrhage following tonsillectomy may be immediate or post-operative. Lindley Sewell[1] reports fifty cases of serious hemorrhage, with nineteen deaths. As this report is the most recent one on this complication that I have read and his number of cases tallies with the numbers reported by others, I take it for granted that it probably summarizes all the extremely serious bleedings and deaths reported in previous papers. We all know from personal experience and from the experience of our immediate colleagues that this is by far an inadequate report of the serious hemorrhage resulting from tonsillectomy. I feel that technic and accident are more frequently the cause of this complication than hemophilia. To minimize the danger of this complication in tonsillectomy, I should suggest the employment of finger enucleation. The freedom from post-operative hemorrhage in enucleation is the strongest and most favorable argument for the general adoption of this method of operating.

Hyperpyrexia: Hyperpyrexia, without known cause, is a rare complication of this operation. Hyperpyrexia, with fatal termination occurring after operations of minor importance, is one of the unpleasant sequelae met with in general surgery; so we should not be unprepared for its occasional occurrence in our field of labor. An interesting case of this type is reported by Dr. D. J. G. Wishart.[2] The patient was a girl, 18 years old, presenting no symptom other than those of enlarged tonsils and adenoids. The tonsils were slightly inflamed, coated with secretion, and the follicles were filled with cheesy detritus. The operation was done under general anesthesia, being attended with only moderate hemorrhage. Shortly after the operation the temperature rapidly rose a degree per hour until it reached 107°, and the patient died twelve hours after the completion of the operation. No post-mortem.

It has been my unpleasant experience to have had almost a case identical with that reported by Dr. Wishart. During March, 1909, I operated upon a child, 4 years of age, for enlarged tonsils and adenoids. When the child was brought to the operating room I was told that the patient had a temperature of 99.4°. I refused to operate and proceeded with several other operations upon other patients. After finishing my clinic, I visited the patient in its room and there was won over by the parents, who were anxious to have the operation done, to proceed with the operation. The operation was a remarkably easy and almost bloodless one and the patient was sent to its room in good condition. At four o'clock I was notified that the temperature was 102° and, from that time, its temperature rose steadily until it registered 107.2° at 10 p. m. The child died at 11:15 p. m. None of the treatment instituted influenced the upward tendency of the temperature. An autopsy was made in the early afternoon of the day following its death by Dr. L. W. Glazebrook. There was no blood in the stomach or intestinal tract and all organs of the body presented an absolutely normal macroscopic appearance. We were quite surprised at the findings and embarrassed at our inability to ascertain the cause of death.

Infarct of the lung: I have heard several cases of this character spoken of, but find none reported as such in the literature. When one considers the large cavity left between the pillars after the excision of the tonsil, with more or less bruised tissue which must slough away, it is rather surprising that this complication does not occur more frequently. I have had two cases of this character develop under my care. Two years ago, in June, I operated upon a vigorous, rather large, man of 45 years of age for the removal of both tonsils. The operation and convalescence was slow. A moderate fever continued for six days. On the seventh day the patient returned to his home and was lost sight of by me for nearly ten days, although under the constant care of his family physician. When I saw him again in consultation, I found the patient a very ill man. He was running a septic temperature, coughing constantly, complaining of great pain in the base of his right lung, and presenting a very anxious and distressed countenance. A slight area of dullness, with some moist râles could be made out over base of the right lung posteriorly. The patient was taken to his home in a distant state, when, several weeks later, the full evidence of an abscess of the lung developed, which was later operated upon and drained, with a favorable issue.

I have also had another case of the same character this winter. In December I operated upon a young married woman, 24 years of age. for hypertrophied tonsils. The case was simple in operation and attended with very little hemorrhage. The patient's throat was very sore for several days and the convalescence was slow. Ten days after the operation she developed a severe and harassing cough: the temperature had a moderately septic curve. Physical signs were negative over chest. On the thirteenth day the cough was more annoying and was frequently of a paroxysmal character. She now began to expectorate a large quantity of purulent, very offensive secretion, and complained greatly of an intensely offensive odor whenever she coughed. Examination of the sputum, which was very offensive in odor, demonstrated it to be made up largely of pus cells. The infecting organism was found to be a streptococcus. Physical examination demonstrated a small consolidation between the second and fourth ribs on the right side, with small mucous râles. On the fifteenth and sixteenth days she had great pain in upper portion of right lung. This pain recurred again on the twentieth day of illness. The patient was put on urotropin, and, in the course of three weeks, made a complete recovery, attended by a gradual and complete subsidence of all symptoms.

La Play[3] reports an exceedingly interesting case. A child who had a double tonsillotomy done some eight days before being brought under his observation was thought to have diphtheria and antitoxin was administered. Culture examination proved the case to be of non-diphtheretic character. Subsequently the child, a patient of 8 years, developed pulmonary symptoms. Physical examination showed in the left lung distinct dullness, with an expiratory egophonic souffle. A pleurotomy was done and an abscess cavity drained. Culture of the pus demonstrated the presence of pneumococci. This case appears to be of embolic origin.

General sepsis: Mild sepsis, enduring for a few days, is a frequent complication of tonsillectomy, but the more severe types of general sepsis are seemingly quite infrequent, if one is to judge from the number of cases reported. It is not strange that sepsis follows such an operation when we consider the fact that such large open wounds are constantly bathed in such an abundant flora as is contained in the buccal cavity, but rather strange that it does not occur much more frequently in its severer forms.

A. Sonntag[4] reports the following case: A boy, 7 years old, was operated upon. Two days after the operation the patient felt sick and showed torticollis towards the left side. On the third day there was vomiting, headache and delirium; in the evening, spasms; temperature 39.6°. On the seventh day there was swelling of knee and right wrist; somnolence increased and temperature rose to 40°. Death occurred on eleventh day from severe general infection. Dr. L. W. Dean, in an excellent article in THE LARYNGOSCOPE, narrates three cases of sepsis following tonsillotomy and tonsillectomy. In his article Dean gives a full resume of all reported cases of sepsis as a complication of excision of the tonsils. The first case reported by Dean was a death from general sepsis following tonsillectomy occurring in the practice of Dr. L. L. Smead, of Newton, Iowa. The patient was not in good general physical condition at the time of the operation. All care was employed at the time of the operation to insure as aseptic an operation as possible. The operation was done under local anesthesia. The right tonsil was enucleated and the greater portion of the left. The operation on the left tonsil was incomplete on account of hemorrhage. The wound surface and adjacent tissue, as well as the glands of neck, were greatly inflamed the day after the operation. The temperature ran between 102° and 103°. There was great difficulty in swallowing and breathing. On the third day there was delirium, dimness of vision, and slight vomiting. The amount of urine eliminated became progressively less. On the sixth day all lymphatic glands of body were enlarged; delirium was more pronounced. The patient died on the evening of the sixth day.

The second case reported by Dr. Dean was one of cerebral thrombo-sinusitis, following tonsillotomy with recovery, occurring in his own practice. The patient, a boy of 14 years, was operated upon under local anesthesia at the clinic. He did not remain in hospital after the operation, as directed, and Dr. Dean did not see him again until a week after the operation. The following is the condition of the patient as reported on the seventh day: "The remains of the tonsils were somewhat swollen and reddened. The out surfaces were covered with a fibrous exudate. The pharynx was also inflamed. The condition of the throat was not bad. The temperature was 105°. It had been intermittent. There had been a series of chills. Pulse was 100, very weak. Patient was delirious. Along the anterior border of the sterno-cleido-mastoid muscle a cord-like swelling could be easily felt. On the left side was exophthalmos with panophthalmitis. On the right side was a well-marked optic neuritis. The ear and mastoid seemed normal. Dr. Kimbell's physical examination was negative. Diagnosis: septic phlebitis involving the internal jugular and extending along the cerebral sinuses to the orbital veins, accompanied by thrombosis of the orbital veins on the left and perhaps of the left cavernous sinus. A very bad prognosis was made.". The patient recovered. The third case was one of gangrene of muscle of neck following tonsillectomy. with recovery. The condition narrated did not manifest itself until fifteen days after the operation. The case was one of extensive infection of the glands and tissues of the neck. The condition was met by free incisions and use of bichlorid washing and drainage.

Ballenger[5] reports two severe cases of streptococcus infection. Pierce[6] reports a serious case of infection resulting in a permanent torticollis following a tonsillectomy. Dr. C. E. Deane[7] reports two cases of severe sepsis occurring in his practice.

Emphysema: Subcutaneous surgical emphysema is fortunately a rare complication of tonsillectomy. An interesting case of this character in which the emphysema was very extensive is reported by Dr. Benjamin D. Parrish[8] of Philadelphia. He does not give the name of the operator in his article, or the hospital in which the operation was performed. He states the patient left the operating room in good condition. The operation was attended with a little more bleeding than is usual in such operations. He states that the tonsils were quite adherent and in freezing them a small buttonhole was made in the lower part of the posterior pillar on the left side. "The orderly and nurse noticed on the elevator that the patient seemed to be struggling for breath and also that his neck and face were swelling rapidly." He states that, when he reached the patient, the breathing was rapid and shallow, the face was livid, and the lips cyanosed. The entire neck was puffed out so that the line of the jaw was completely obliterated. The emphysema affected the face and right eyelid and emphysematous crackling extended over the anterior portion of chest as far down as the last rib. By flexing the neck and opening the mouth the breathing was restored and further extension of the emphysema prevented. The patient made a good recovery, with gradual absorption of the emphysema.

I had a mild emphysema occur in my practice, also in a male adult. The emphysema followed a double tonsillectomy and involved only the right side of the neck. In this case the emphysema was noted about an hour after the operation and extended on the right side of the neck almost to the line of the clavicle. There was only moderate swelling, but very distinct crackling. It subsided completely within forty-eight hours.

Infection of the lungs and serous membranes: The occurrence of pneumonia and pleurisy as sequelas of tonsillectomy is not usually reported, but there is a sufficient number of cases incidentally reported that indicates that this is not an infrequent complication. In my own practice, covering now some years, I have had two cases of pleurisy, both of which recovered, and one case of pneumonia, which was fatal in its termination.

Coley, as quoted by F. C. Ard, reports three cases of septic infection of the serous membranes under his observation, and Putnam as having seen two cases of meningitis following the operation.

In a recent article, Eugene A. Crockett[9] states that in the Massachusetts Charitable Eye and Ear Infirmary, within the past few years, there had been two cases of ether pneumonia, one of which died.

Disturbances in relationship to the nervous system: Complications in connection with the nervous system are more apt to occur in those of a hysterical temperament. I found two cases of this character to report.

E. Bergh[10] reports a case in which nervous disturbances developed after tonsillectomy in a female child, 7 years old. Immediately after the operation the little patient had an attack of strangulation, followed by spasmodic contraction of the thighs on the abdomen. Patient had at decreasing frequency subsequent attacks of strangulation, followed by muscular contractions. Patient finally recovered under treatment. Bergh states that the patient was of a nervous temperament, but the nervous attracks were doubtless due to the tonsillectomy.

Pfingst reports quite an interesting case of hysterical hemiplegia coming on a week after a tonsillectomy. This patient was a robust young woman, 18 years of age, with a personal history of an hysterical temperament. She manifested a number of symptoms during her illness, all of which partook of the hysterical type. The patient remained in this condition for a period of three months, when gradual improvement set in. The last symptom to disappear was the hemiplegia, which entirely disappeared four months after the tonsillectomy.

Status lymphaticus: Dr. F. R. Packard[11] gives the report of a case upon which he performed the operation of tonsillectomy, which resulted in death, apparently due to a status lymphaticus. The operation was done without incident of any kind whatever, upon a female child 3½ years of age. He states, "the child was apparently a perfectly normal little girl, of the average size and healthy appearance, except for a somewhat sallow complexion." Immediately after the operation, nor at any subsequent period was there any bleeding. When coming out from under the ether, she vomited a small quantity of blood. The operation was done at 1 p. m. At 4:30, 5:30 and 6:30 p. m. the child was examined and no bleeding noted. About 6:20 the little one's condition became very serious, temperature 100°, respiration 36, and pulse rate 156. At 7 p. m. the child stopped breathing, for which no relief came, although tracheotomy was done. No autopsy was obtained. Packard states, "this case presents features which, to my mind, render it practically certain that the fatal result was due to the condition known as status lymphaticus. The child's death was certainly not due to hemorrhage, nor could it be attributed to the method of administering the anesthetic or the quantity used. As to status lymphaticus so little is really known about it that, unless an autopsy had been obtained and an enlarged thymus gland found, it would be impossible to state positively that this condition had been the cause of the child's death."

Dr. T. J. Harris[12] reports a case of death from status lymphaticus. In Dr. Harris' case the operation was done under cocain-adrenalin infiltration. Two injections of the local anesthetic were administered, as it was thought that all of the first given was lost through escapage from the follicles of the diseased tonsils. The patient was profoundly impressed after the first injection. "Complained of feeling bad, vomited, had a slight, convulsive seizure, presenting the appearance we often see when cocain has been employed locally for a nasal operation." It was necessary to support the patient during the operation. After the completion of the operation Dr. Harris states he was struck by the pallor of the patient and discovered he was unconscious. All efforts at resuscitation, employed for over an hour, failed. An autopsy was performed, and nothing abnormal discovered except that the right auricle was swollen and the right auricular appendage was dilated with fluid blood until it was five times as large as the left; the right ventricle was also swollen; and the thymus gland was hypertrophied and weighed eighteen grammes. The examination of the thymus gland demonstrated that it showed no atrophy. Dr. Harris states that "the patient died, in all probability, of an over-dilated right ventricle, due to the enlarged thymus, with its action on the trachea and recurring laryngeal, with the cocain-adrenalin injection acting as an exciting cause." Dr. E. B. Dench also reports a case of status lymphaticus.

Amygdalotomy rash: This complication occurs rarely as a sequela to the removal of the tonsils and is of no consequence except for the anxiety it may cause. It usually appears from two to three days after the operation and appears either in a roseola, papular or erythematous form. It makes the initial appearance usually on the chest, abdomen or limbs. It may or may not be attended by itching. It attains its maximum intensity in a day or two and then rapidly disappears. It is usually attended by a slight elevation of the temperature. Dr. Wyatt Wingrave reports thirty-four cases of the rash. Dr. Edgar Forsyth[13] also reports cases in an excellent paper. I have had this rash appear in four cases upon which I have operated. Dr. S. S. Adams reported it as occurring in a case upon which I operated, while the patient was under his observation. This condition is no doubt due to an auto-intoxication from the blood which is swallowed during the operation. A brisk purgative the day after the operation should prevent the occurrence of the complication.

Diphtheria: A case of diphtheria following tonsillotomy is reported by August Caille[14]. This complication can only result in operating upon a patient who is a carrier. For this reason it would be wise to make cultures of the faucial secretions of all children upon whom the operation is to be done.

Oswald Lovenstein[15] after an extensive review of the subject of diphtheria in connection with tonsillotomy, makes the statement that the mucous membrane of the mouth and nose lodge a considerable number of cocci, spirilla and bacilli of many varieties; among the latter may sometimes be found virulent Klebs-Loeffler bacilli. He gives reports of cases of diphtheria ensuing after tonsillotomy. Lichtwitz[16], in two different articles appearing in 1896 and 1900, discusses the diphtheritic phase of tonsillar complications.

F. Kobrak[17] reports a case of excision of the tonsils in a female child, within three days after she showed severe symptoms of angina, with the formation of a membrane which proved to be diphtheritic. To this was added an eruption of scarlatina. The child died.

Local disturbances as sequelae of tonsillar operations: There are a few cases reported of injury about the faucial region, less, probably by far, than actually occur, as many of these result from accident during operation and from faulty technic; therefore, the operator hesitates to report them.

Dr. Lindley Sewell in his paper reports two cases of tracheotomy which were necessitated on account of prolonged glottis spasm with collapse and cyanosis. Without giving authority he also reports a case of torticollis and a case of retro-pharyngeal abscess. Bauchecourt and Martin, as quoted by Dean, report three cases of edema of the pharynx and the glottis, one of which was fatal.

Dr. I. Lederman[18] reports a unique complication in the formation of a hematoma in the fauces following a tonsillectomy. Dr. Lederman states that shortly after the removal of the tonsil, blood began to extravasate under the mucous membrane until a large mass nearly the size of a hen's egg was found in the tissue of the palatine arch.

Dr. Francis Huber[19] reports a case of lateral pharyngeal abscess occurring in a child two years old, following a tonsillectomy. Dr.

Van D. Hedges, of Plainfield, New Jersey, is reported, by Dr. F. C. Ard, to have observed two cases of torticollis following tonsillectomy. The condition lasted two months in one patient and one month in the other. Condition ascribed to sepsis.

Injury to the pillars and accidental removal of the uvula are not uncommon results of operative work for removal of the faucial tonsils. Cicatrices forming in the palatine arch, which more or less impair the movement of the vela curtain and adhesion of the anterior and posterior pillars to each other in the process of repair, are possible occurrences. These results are not of any serious moment to the speaking voice, unless the injury is great, but are of decided moment to the singing voice or to the voice used for elocution purposes.

Dr. Hudson-Makuen[20] writes, in no hesitating terms, in regard to these conditions, as follows: "Seeing as I do many children having defects of voice and speech, day after day for many successive weeks, I have, perhaps, a somewhat unusual opportunity for studying the local, as well as the general, effects of the operation under discussion, and I confess to you that I have been amazed at the apparent disregard for the surrounding structures with which much of this work is done. The sacrifice of one or more pillars of the palate and of the uvula seems not to give some operators any concern whatsoever and the results upon the voice and speech have been in some cases, not only disastrous, but altogether irreparable."

Infection of the middle ear: As a complication of tonsillectomy this is an occasional occurrence, as all operators are aware, but I find only a few reports of such infection. To be sure, this complication is more apt to occur after operation for adenoids than after tonsillectomy.

Infection of the cervical glands: This is also another type of complication which is occasionally manifested, but, as it is looked upon by operators as only an incident in the cases, they are not usually reported.

Unclassified: A case of gangrene, with death, is reported by Ter-Kenle in a child of 7 years, eight days after a tonsillotomy, as quoted by Dr. S. M. Bourack.[21]

In Crockett's article, previously referred to,[9] he states, "The occurrence of twelve deaths in this city (Boston) and its suburbs in the last year and a half or two, following the removal of tonsils, as well as the occurrence of a large number of very considerable hemorrhages, also fatal unless checked by experienced hands, would prove to my mind that it is not wise to advise such removal except on sufficient symptoms." Evidently these twelve cases of death referred to by Crockett have not been reported by the operators, neither can they be classified, as the reporter does not refer to the causes of death.

Also, as unclassified may be mentioned the case reported by Schuchardt[22] of a case of a sudden death following excision of tonsils, due to hemorrhage, asphyxiation or shock. The patient was a child of 13 years of age, of the lymphatic, chlorotic constitution, who died immediately after the removal of the right tonsil, the left having been previously operated upon. All methods of restoration were adopted, including tracheotomy.

If anything can be gleaned from the reports which I have enumerated above, it would seem to be that tonsillectomy may be at times attended by most serious, even fatal, complications. It behooves us, therefore, to be most careful in our technic and most cautious in our post-operative attention to our patients. Tonsillectomy, therefore, should be considered a major operation and the patient should be prepared and surrounded with all the post-operative attention as in any major operation.

With such knowledge, is it proper and wise to suggest this operation, as is often done by the internist, with insufficient and inaccurate data from a local standpoint, as a prophylactic measure? I believe that this point of view, as an overwhelming demand for the removal of the tonsils, is too often presented to the reluctant patient. I believe that a few general conditions probably have their portal of entry into the general system through the tonsils, but I would demand that, in every individual case, the tonsil be first proved to be guilty before it is sacrificed. When suggesting such a procedure under such conditions one must hold steadfastly in mind the fact that we by this operation are placing the patient in danger of his life—probably a greater danger to his life than the possible remote infection.

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The Surgical Anatomy, Diagnosis and Treatment of the Inflammatory Affections of the Nasal Accessory Sinuses in Children.

SEYMOUR OPPENHEIMER, *Arch. of Ped.*, Jan., 1913.

The antra, though rudimentary at birth, are well defined and they and the ethmoid cells are the most important of the sinuses in childhood. The frontal sinuses only develop in the seventh or eighth year, and the sphenoid is usually formed by that time. The recognition of any form of sinusitis in childhood is difficult, and yet the frequency of the acute infectious diseases renders sinus trouble more common than is generally supposed. The author attaches great importance to the x-ray in diagnosis. The treatment of the various sinus conditions in childhood, as stated by the author, varies but little in principles from the methods pursued in adults.

PACKARD.

THE DIFFERENTIAL DIAGNOSIS BETWEEN VINCENT'S ANGINA AND PRIMARY SYPHILITIC LESION OF THE TONSIL.*

DR. ROBERT LEVY, DENVER.

A young man, 24 years of age, was taken sick with the usual symptoms of sore throat, both general and local. Being subject to attacks of this kind at least once a year he thought nothing of his condition until he began to have great pain upon swallowing, with some swelling of the neck. He called in his family physician, who pronounced his a case of quinsy involving both sides. The swollen tissues were incised and shortly after there was a sudden discharge of a small cupful of bloody pus, which, however, did not give the expected relief.

Between two and three weeks after the onset the swelling in the neck became more marked, and one week after the supposed abscess broke, I was called to see the case. I found the patient weak, somewhat emaciated, suffering considerable pain, more marked upon swallowing, a slightly increased temperature and moderately rapid pulse. The examination of the throat revealed a bilateral swelling of the tonsillar and peritonsillar structures. There seemed to be comparatively little difference in the two sides. Upon the surface of the swollen tonsils a tenacious, gray exudate could be seen uniformly distributed. To the touch the tumefaction seemed to be harder on the left than on the right side and on this side also the cervical adenitis was more pronounced. No local or general treatment was of any avail. Within one week the swelling on the right side had subsided but on the left there developed a distinct ulcero-membranous lesion with dirty, greenish-gray exudate which was readily removed, leaving a bleeding surface. The surrounding margins were elevated and moderately hard.

Vincent's angina appeared to be the clinical diagnosis. Bacteriological examination of the exudate as well as of the serum from the surface obtained by curetting, revealed the presence of numerous fusiform bacilli and what was apparently a typical Vincent spirochete but failed to disclose the spirocheta pallida. More vigorous local treatment such as is recommended in Vincent's angina was instituted and still the patient made very unsatisfactory progress. Two subsequent examinations for spirocheta pallida were made, both of which were negative.

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*Read at the meeting of the Middle Section of the American Laryngological, Rhinological and Otological Society, Saint Louis, February 22, 1913.

At the end of six weeks from the onset of the affection, secondary skin lesions manifested themselves and the Wassermann reaction was now positive. One injection of salvarsan cleared up the local lesion and the subsequent history of the case confirmed the diagnosis of chancre of the tonsil. The mode of infection was traced to a drinking cup which was used in a shop as common property. It was discovered that in this shop one of the employees had a syphilitic sore throat.

This case is cited as an illustration of the difficulty in differentiating two lesions, both of which are by many considered rather rare, but which, upon a study of the literature, will be found to be not uncommon. Vincent's angina as an entity is becoming more frequent as our attention is called to it and as our methods of recognizing it are becoming more positive, and although for several years after its description by Plaut, in 1894, and Vincent, in 1896, few cases were recorded, recent literature has placed so many of these cases before us that it is no longer the subject of special comment.

Chancre of the tonsil is also less uncommon than generally believed. By many authorities it is held to be the most frequent of all extra-genital primary lesions. Several other cases occurring in my own practice and reported by others have caused much discussion as to the possibility of differentiating these two lesions in their early manifestation. In the case related above, the diagnosis of Vincent's angina was borne out by clinical and bacteriological findings, but the subsequent history of the case proved it to be one of syphilis. On the other hand, a most interesting case is reported by Zinsser, in which he states that when the patient "came under observation the lesion was a characteristic chancre of the tonsil but proved to be one of non-specific ulcer belonging to the Plaut-Vincent group." The difficulty is further increased by a similarity in the spirilli in the two conditions, by the fact that salvarsan has been shown by Gerber to be destructive of other spirochetes besides those of syphilis and by the healing of a case of Vincent's angina by this method.

What is the typical appearance of Vincent's angina? I believe it is impossible to state this, in that it may manifest itself in a mild or a severe form. The appearance, generally speaking, is that of a dirty ulceration, irregular in outline, having a hard, everted edge, and with a tendency to spread deeply rather than superficially. The surface of the ulceration is covered with a grayish-green pultaceous deposit and is readily wiped off, leaving a bleeding surface beneath.

What is the typical appearance of chancre of the tonsil? It is also impossible to answer this definitely. Generally speaking, it presents the appearance of a dirty ulceration surrounded by a zone of indurated tissue, the edges everted and the exudate upon its surface dirty and pultaceous, leaving a bleeding surface beneath. The similarity in the local appearances is further found in the general and local symptoms. In both lesions the pain may be slight or severe. In both the constitutional symptoms may be mild or marked by slight rise of temperature, general malaise and slight, though gradually increasing malnutrition. The glandular involvement is found in both, presenting itself sometimes early and sometimes after several weeks. As far, therefore, as local appearances and general or local subjective symptoms are concerned, the diagnosis cannot be positively made.

Of what help will the history of the case be? Very little, if any, in the majority of cases. Chancre of the tonsil is acquired either innocently through drinking utensils and the like or as the result of perverse sexual practices. In the first instance the patient is unaware of having acquired the infection and consequently *cannot* aid the investigation, and in the second instance, knowing the possibility of acquiring an infection he will not admit the bestial practice and so *will not* aid the investigation.

We therefore look with hope to the result of bacteriological research and what problems have we here to confuse us? In the case of chancre we expect to find the spirocheta pallida, but although this micro-organism when found, is positive identification of the disease, it has been shown that it may be recovered almost invariably from glands *secondarily* involved but that rarely is it found in the early stage of the tonsillar lesion. In a series of investigations to determine if it be possible to recover the spirocheta pallida from the tonsils, Campbell found it possible in 80 per cent to 90 per cent of untreated cases with secondary lesions, but did not find it in his *primary* cases. One should not be misled by the discovery of the spirocheta dentium which is very frequently found in the mouth and is the one spirocheta which is more likely than any other to be mistaken for the pallida.

The spirillum of Vincent which is associated with the fusiform bacillus in Vincent's angina is somewhat more easily distinguished but nevertheless, as stated by Zinsser, the differential diagnosis of spirocheta of the mouth requires the greatest caution because of their close resemblance to one another. Moreover, it has been shown that the characteristic Plaut-Vincent micro-organisms are present as innocuous saphrophytes in many mouths, and especially in those in which there are carious teeth. Their favorite location seems to be around the gums and in the tonsils.

How then can bacteriological examination aid us? Only partially and indefinitely. Positive or negative results of microscopic investigation offer nothing reliable or pathognomonic except in the one instance, namely, the finding of undoubted spirocheta pallida in a local lesion having the suspicious appearance of chancre. A certain amount of reliance may be placed upon the finding of the Plaut-Vincent micro-organisms in abundance. It is true that the spirocheta and the fusiform bacillus in symbiosis must be present in order to establish the diagnosis of Vincent's angina and it is also true that they must be found in large numbers and almost to the entire exclusion of other micro-organisms. Such finding gives us decided assistance.

How then can the diagnosis be made? In the light of our present knowledge and with the exceptions mentioned above, a positive diagnosis cannot be made. We may form a tentative opinion as to the most likely nature of the lesion, but during its early stages we should give a very guarded opinion. The progress of the case will be our most valuable guide. Vincent's angina is often a self-limited affection and is generally amenable to local treatment. Primary syphilitic lesion may also be self-limited, but in time, secondary lesions will manifest themselves. These should be carefully watched for in every case, even after the local lesion has healed. One should, therefore, look upon every ulcero-membranous lesion of the tonsil with suspicion, reserving his judgment until the progress of the case establishes the diagnosis.

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Technical Remarks on Tonsillectomy. H. Marschik, *Monatschr. f. Ohrenh.*, Heft 1, 1913, p. 80.

The author discusses the preferred raspatory for enucleation, the Whitehead mouth-gag, the proper illumination of the operative field, anesthesia and the instruments and technic employed in the Chiari clinic.

Ed.

SUSPENSION LARYNGOSCOPY, WITH REPORT OF CASES.*

DR. SAMUEL IGLAUER, CINCINNATI.

Nature has well fortified the larynx against invasion. Its sensitive reflexes and marvelous mechanism constitute its defenses. The larynx can only be entered when off its guard or when it is lulled to sleep by anesthetics. The time-honored method of operating within the larynx by the aid of the image in the laryngeal mirror has yielded brilliant results but requires prolonged training on the part of the operator as well as the active co-operation of the patient. Direct laryngoscopy by means of a long spatula as first advocated by Kirstein and subsequently improved by the tubes of Killian, Jackson, Bruenings and others has constituted a great step in advance and has enabled the operator to become somewhat more independent of the patient. The personal equation of the latter, however, still enters into the success of the procedure unless a general anesthetic is employed. In addition, the operator is somewhat restricted in his endeavors owing to the fact that one hand is constantly engaged in holding the spatula in place and the instrumentation is necessarily restricted by the walls of the tube.

The recent discovery by Killian[1-2] of a new method of laryngoscopy, i. e., suspension laryngoscopy, has eliminated most of these difficulties and bids fair to greatly widen the field of intra-laryngeal surgery. This discovery was largely the result of an accident and came about in the following manner:

Desiring to obtain some drawing of the larynx and deeper pharynx, Killian introduced a long spatula into the larynx of a cadaver, in which the head overhung the edge of the table. In order to give the artist sufficient time to reproduce what he saw, Killian fastened the handle of the instrument to a support immediately above the table and was rather astonished to find that the head of the cadaver swung freely suspended on the spatula. This experience led him to make repeated experiments on cadavers and finally to try it on the living. He found that he obtained an excellent view of the parts and that patients bore the procedure very well. Killian modified his original spatula from time to time, and it was finally perfected by one of his assistants, Dr. Albrecht,[3-4] of Berlin.

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*Read at the meeting of the Academy of Medicine of Cincinnati, April 7, 1913.

Description of the Instrument: Albrecht's improved hook-spatula (Figure 1) consists of a long, grooved tongue blade (A) bifurcated at the end so as to fit into the valleculae at the base of the tongue, and having a median sliding prolongation to fit behind the epiglottis. (B, B^1.) The spatula (3 sizes) is attached to a vertical arm or handle (H) which in turn is connected above with a horizontal arm in the same plane as the spatula. (E). The horizontal arm, which can be rotated to one side if necessary (E^1). On the horizontal arm is the adjustable vertical suspension hook (D) which sliding on a ratchet enables one to bring the center of gravity over the tip of the spatula. The instrument is also provided with a tooth-plate to fit behind the upper incisor teeth in order to prevent the spatula from gliding out of the mouth. (P) (C), is a counter-

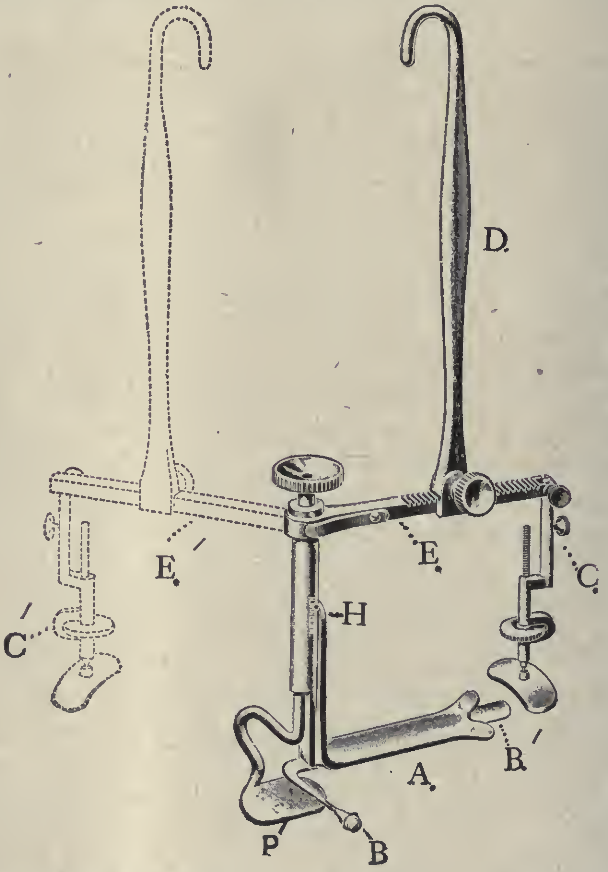

Figure 1. Albrecht's improved hook-spatula. A. Tongue-blade. B, B^1 Sliding Prolongation. H. Handle. E. Horizontal arm. D. Suspension-hook. P. Tooth-plate. C. Counter-pressor.

pressor, which may, if necessary, be applied to the external surface of the larynx in order to bring the anterior commissure into view.

Quite recently Lautenschlaeger[5] modified the spatula and claims to have simplified and improved the instrument. In this country, Freudenthal[6] has reported excellent results from the use of Albrecht's instrument.

In addition to the spatula, one must have at the end of the table some sort of adjustable horizontal bar, which must be strong enough to support the weight of the patient's head. For this purpose Killian attached to the side of the table a special adjustable apparatus to which he gave the rather suggestive name of gallows. I have found that the horizontal portion of the ordinary instrument tray serves well as an excellent support for the spatula. (Figure 2).

Technic: The technic of suspension laryngoscopy is as follows: As a source of illumination the ordinary head-mirror, the Klaar electroscope, or small electric lights attached to the instrument may be employed. Suspension laryngoscopy may be carried out either under local or general anesthesia. As a rule, local anesthesia suffices for adults, but in order to obtain the necessary relaxation it must be reinforced by an injection of scopalamin, gr. 1/150, and morphin, gr. ¼, administered a half hour before the operation.

Local anesthesia is obtained by applications of a 20 per cent solution of cocain (a few drops of adrenalin added) to the pharynx, the base of the tongue and the larynx. Children usually require a preliminary dose of codein followed by a general anesthetic, and in addition a few local applications of cocain are necessary to abolish the reflexes.

After anesthesia has been obtained, the patient lies, or is placed in the dorsal position with his head overhanging the end of the table. An assistant supports the head, since the spatula can be more readily introduced if the head be only partially extended. The patient is now instructed to hold out his tongue. (Mouth-gag and tongue-forceps under general anesthesia.) The operator seated on a low stool or kneeling at the head of the table introduces the spatula into the mouth until it approaches the epiglottis. At the same time the tooth-plate is placed behind the upper incisors. The median or sliding blade of the spatula is now pushed behind the epiglottis, while the head is gradually lowered by the assistant and under direct inspection, the median blade is brought in contact with the laryngeal surface of the epiglottis, while the bifurcated tip of the spatula is pressed into the valleculae at the base of the tongue. (The median blade need not be used if the interior of the larynx is not to be exposed, and in children it can usually be dispensed with entirely.) The horizontal limb of the spatula, which, up to this time has been turned to one side to avoid contact with the patient's chest, (Figure 1, E¹), is now swung into the median line and the hook on the end of the spatula is fastened to the gallows. The assistant now slowly releases the patient's head, which is allowed to swing freely upon the spatula (Figure 2). The suspended head is supported by the structures attached to the hyoid bone and lower

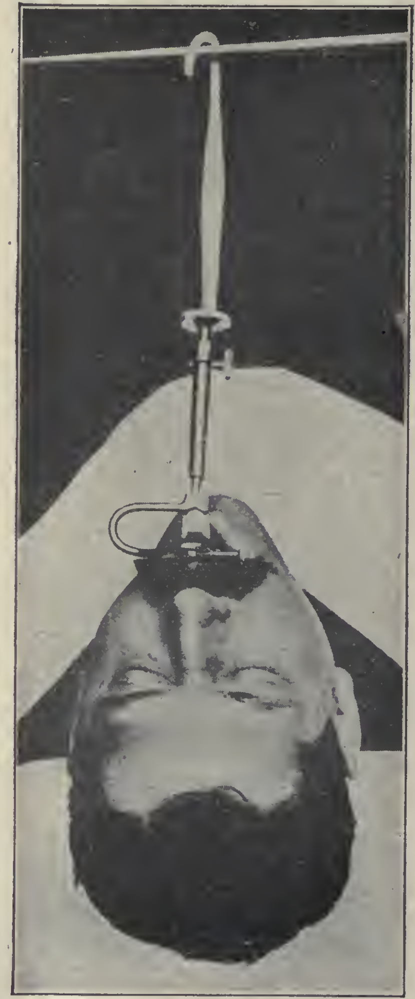

Figure 2 shows the patient's head held in suspension. (Photograph by Dr. Albert Freiberg.)

jaw as perfectly demonstrated in the radiogram (Figure 3) which Dr. Lange has been kind enough to make for me. Contrary to what one might expect, suspension is borne by the patient without much discomfort and may be continued for some time. In one instance, Killian demonstrated a case for over an hour, and at another time exhibited a patient to 120 persons. One of my patients made peculiar sounds during suspension and I thought him in distress, but on subsequent inquiry he stated that he was merely laughing at some poor joke of which someone in the operating-room was guilty.

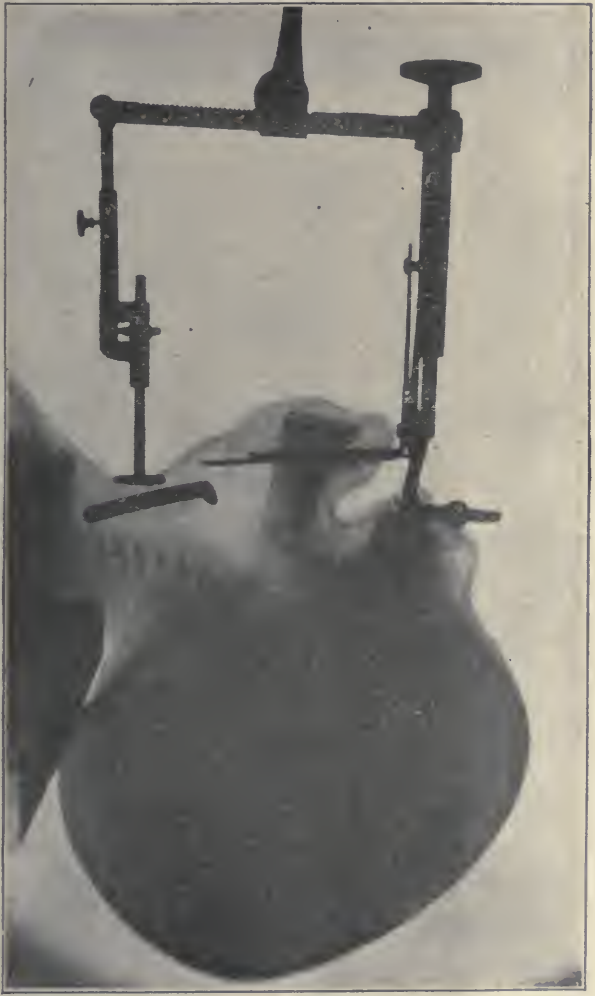

Figure 3. Radiogram showing the suspension laryngoscope in situ in the cadaver of a child. An intubation tube has been introduced into the larynx. Note position of hyoid bone and the ballooning of the pharynx.

After making finer adjustments the structures brought into view with the head under suspension consist of the hard and soft palate, the tonsils with the anterior and posterior pillars under tension, the hypo-pharynx, the cricoid ring, the arytenoids and the posterior part of the vocal cords. In order to bring the anterior commissure into view, slight pressure may be made with the finger or counter-pressor (Figure 1, C; also Figure 3) on the external surface of the thyroid cartilage. Quite frequently the trachea may be inspected, (suspension-tracheoscopy). The parts under examination may be viewed directly and from many angles, so that there is a certain plasticity and perspective obtained, which is wanting under any other method. This wide field of vision, as well as the wide approach to the larynx, gives a great advantage to the operator while both of his hands are free for any necessary manipulations.

Report of Cases: The following cases illustrate some of the uses of suspension laryngoscopy:

Case 1: Mrs. J. B., age 38, on the service of Dr. Hoppe, Cincinnati Hospital. Diagnosis: Bulbar paralysis. Patient was unable to swallow, and the pharynx, soft palate, and tongue were insensitive. A slight application of cocain was made to the base of the tongue and to the epiglottis. Suspension laryngoscopy was performed and the larynx with the exception of the anterior commissure was brought distinctly into view. The motion of the cords was unimpaired. A probe was applied to the glottic region and showed some sensation still present with slight reflexes. The patient was demonstrated to several internes and students, who obtained an excellent view of the larynx.

Case 2: *Cauterization of the larynx under suspension laryngoscopy.* Mr. A. R., aged 28, consulted me in June, 1912, complaining of slight hoarseness and slight pain on swallowing. Previous history: About four years before, patient contracted pulmonary tuberculosis and went West for his health, working as a surveyor. He was compelled to use his voice a great deal, and one day about three years ago he suddenly became hoarse.

Examination of the larynx: The mucous membrane along the right border of the epiglottis was ulcerated, exposing the underlying cartilage. There was but very little inflammatory reaction about the ulcer. There was a slight thickening of the inter-arytenoid space with edema of the ary-epiglottic folds.

Treatment: The ulcerated epiglottis was cauterized several times under direct laryngoscopy, and the ulcer began to heal. On March 16, 1913 a small ulcer still remained on the epiglottis to the right of the median line with slight edema of the ary-epiglottic folds and slight inter-arytenoid infiltration. Patient was given a hypodermic of scopalamin, gr. 1/150 and morphin, gr. ¼, one-half hour before the operation. Twenty per cent cocain solution was then applied to the pharynx, larynx and base of the tongue. Under suspension laryngoscopy the ulcerated epiglottis was thoroughly cauterized and igni-puncture was made in the inter-arytenoid space. Patient stated after the operation that he had experienced no discomfort whatever. A slight inflammatory reaction followed at the site of cauterization, without any pain or difficulty in swallowing. At the present time the ulcer is practically healed.

Case 3: Electro-cauterization for tuberculosis of the larynx. Mr. F. K., aged 53, referred by Dr. Behrman, February 26, 1913, complaining of pain in the larynx and hoarseness.

Previous history: Patient was always well until six years ago, when he had a slight attack of pleurisy. Consulted Dr. Behrman in June, 1913, who found signs of chronic laryngitis with thickening of the right cord. During the past two weeks an ulcer suddenly appeared on this cord. Examination of the larynx revealed an ulcer on the right cord about ⅜ of an inch long and ⅛ of an inch wide occupying the middle third of the cord. The ulcer was grayish-white in color, superficial with slightly reddened overhanging edges. The remainder of the cord was congested. The motion of the cord was not impaired. There was a slight thickening in the inter-arytenoid space to the left with a small ulcer at this point. Smears from the ulcer failed to show any tubercle bacilli. The diagnosis rested between tuberculosis and carcinoma. On March 1, 1913, a small portion of the ulcer was punched out under indirect laryngoscopy for a microscopic examination. The laboratory report of Prof. Wooley and Dr. Mombach stated that a few tubercle bacilli were found in the section. March 18, 1913, after a preliminary injection scopalamin and morphin and a local application of a 20 per cent cocain solution, the patient was placed in suspension. The inter-arytenoid space was easily seen and the electro-cautery applied. There was some difficulty in bringing the vocal cord into view, so that the patient was seated in a chair and the cautery applied by the direct method.

Case 4: Igni-puncture of a tuberculous infiltration of the larynx. Mrs. K., aged 34, referred by Dr. G. M. Galley. Chief complaint: Aphonia with pain in the larynx radiating toward the left ear and down the left side of the neck. Patient became ill about a year ago, at which time Dr. Galley made a diagnosis of pulmonary tuberculosis with positive sputum. Patient has spent the past year at the Mt.

Vernon Sanitorium, where she has gained thirty-five pounds. The aphonia began about a year ago, while the pain has been present for the last three or four weeks.

Examination of the larynx: There is a marked infiltration of the inter-arytenoid space with slight edema of the ary-epiglottic folds. No ulceration visible. The cords appear normal, but cannot be approximated, hence the aphonia.

March 22, 1913. Scopalamin, morphin and cocain anesthesia was employed. Suspension laryngoscopy was then performed and several deep punctures were made with the electro-cautery into the infiltrated arytenoid space.

Case 5. Removal of a papilloma of the larynx under suspension laryngoscopy. E. D., aged 3, patient of Drs. Corliss and Sattler. Child first came under observation on August 25, 1912, suffering greatly from inspiratory dyspnea with aphonia. This condition had been coming on gradually for two years. An examination of the larynx by the direct method showed a large, papillomatous mass on the left vocal cord, and at the anterior commissure.

The first attempt to remove the tumor without the aid of a general anesthetic proved a failure, since after prolonged effort the child became almost asphyxiated and required artificial respiration. Two days later, under the ether-chloroform sequence the papilloma was easily removed by the direct method.

December 23, 1912, child returned to the city with great improvement in breathing and voice. A slight recurrence of the papilloma was removed by the direct method under local anesthesia.

On March 18, 1913, a small papillomatous mass was noticed on the posterior commissure. Under local anesthesia and suspension laryngoscopy this was removed with but little difficulty with Mosher's spiral forceps. Previous attempts to use this instrument on this patient had always failed. In addition to the surgical treatment, Dr. Lange has employed the x-rays with the idea of preventing recurrence.

Case 6. Removal of a papilloma from the larynx. Miss A. T., aged 20, seen in consultation with Dr. W. Harris, March 29, 1913. The patient has been hoarse since early childhood, and suffers with slight dyspnea on exertion. Several years ago Dr. Harris removed a papilloma from her larynx; the hoarseness has increased during the past year. Examination with the mirror was very difficult, but after applying cocain, a small, pedunculated mass about the size of a pea apparently attached at the anterior commissure could be made out, and also some small papillomata in the inter-arytenoid space. April 1, 1913, under scopalamin, morphin and cocain anesthesia, an attempt was made to remove the papillomata under suspension laryngoscopy. The reflexes persisted for some time and a second hypodermic of morphin was given. Mosher's forceps brought away some small fragments. The spatula was then introduced behind the epiglottis beautifully demonstrating the tumor, which was removed in several pieces.

Comment: Owing to the disposition of this patient and the strong reflexes, the tumor would probably not have been removed by any other method without the aid of a general anesthetic.

In addition to the above cases* following the suggestion of Killian, I have undertaken the enucleation of the tonsils in three cases, but can see no special advantage in this procedure.

Conclusions.† Suspension laryngoscopy has certain distinct advantages for the patient, the surgeon and the student.

The patient takes a passive part in the procedure, suffers but little discomfort, can tolerate prolonged operations within the larynx and is not annoyed by saliva or blood flowing into the trachea.

The operator works in an easy position with both hands free, and has a wide field of vision with the larynx at close range with ample space for all necessary manipulation. Much more extensive intra-laryngeal operations are now possible than heretofore. As suggested by Killian operations upon the palate, pharynx and tonsils may at times be advantageously carried out with the patient in suspension.

The pathology and the surgery of the larynx can be better demonstrated to students by this method than by any other.

In short, suspension laryngoscopy constitutes a distinct and notable advance in the domain of laryngology.

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*Since the above was written, an additional case have come under observation, with Dr. J. W. Murphy in consultation.

Mr. A. L. had a tumor of about the size of a small navy bean situated just above the vocal process of the right cord. The nature of the tumor was uncertain. On April 7, 1913, an attempt was made to remove the tumor by introducing the suspension laryngoscope behind the epiglottis. All blades proved too short (patient being 6 feet 2 inches in height) and slipped out of the larynx. Finally a medium-sized blade was introduced obliquely from the angle of the mouth and the tumor was removed.

†At the conclusion of the reading of this paper, suspension laryngoscopy was demonstrated upon a patient, and all those present had an opportunity of viewing the larynx, etc.

REGENERATION OF THE MEMBRANA TYMPANI.*

DR. GEORGE M. COATES, PHILADELPHIA.

It is a common sight in the treatment of aural disease to find false or cicatricial membranes occluding the external auditory canal, and these are often a source of great annoyance to the aurist. They are of two kinds: those of a firm, skin-like texture, the direct result of operative treatment either through the canal or on the mastoid region as in the radical operation for the cure of chronic mastoiditis; or they are the regeneration of some part of the destroyed tympanic membrane. It is not the purpose of this paper to treat of those coming under the first class. They are, fortunately, of comparatively rare occurrence, due not alone to faulty technic on the part of the operator, but also to accidental traumatism, acid burns and similar causes. Nor are cicatrices of the membrana tympani by any means uncommon. The subject of this paper is the spontaneous re-formation of ear-drums that have been practically completely destroyed, and a careful search of the literature of the subject shows dearth of reports of similar cases. Three that have come under my observation are reported here:

Case 1: T. J., mechanic, a patient at the Polyclinic Hospital, 40 years of age. General health excellent. There had been a profuse discharge from the left ear since infancy, apparently not due to any of the exanthemata, though the exact origin of the trouble is unknown. He first came under treatment, which was of the ordinary routine description, about two years ago, and shortly afterwards the ear became dry. Suppuration occurred at intervals, but until six months ago no sign of regeneration had taken place. The membrana vibrans was entirely destroyed except a small ridge in the upper part of the canal covering the stump of the malleus. Hearing had greatly improved during the eighteen months of treatment.

He was absent from the dispensary for several months following this period, and on his next appearance it was found that the ear was still dry. A cicatricial membrane had formed from the remaining edges of the destroyed drum and in its normal position. In the center of this a small irregular perforation was still present, about one-fifth the size of the entire membrane. A small crust adhered to the margin of this which, on being removed, left a raw edge. The middle ear was dry and devoid of granulations. He was kept under observation by weekly visits to the dispensary, but no treatment was instituted. The perforation continued, however, to decrease in size until shortly before the present writing it entirely closed. His hearing has remained stationary. The membrane is thin and essentially of a cicatricial nature.

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*Presented as a candidate's thesis to the American Laryngological, Rhinological and Otological Society, 1907.

Case 2: A patient in the Out-Patient Department of the Pennsylvania Hospital, 70 years of age, and of robust health and constitution. The left ear had been suppurating continuously for twenty years until about two years ago, when, under routine treatment the granulations in the cavity of the middle-ear disappeared and the suppuration ceased. He does not remember the exact origin of the disease but attributes it to a "cold." At the time of his first visit, the tympanic membrane was found to have been almost entirely destroyed a few ragged points at the circumference being the only remaining vestiges; a great part of the ossicles had also disappeared. The middle ear contained a small amount of friable granulation-tissue. He was discharged with a dry ear, and hearing for the watch at about six inches. A year later he returned complaining of a very much decreased hearing in the ear but no history of further suppuration. Examination showed that a membrane had formed across the canal, apparently slightly in front of the normal position of the drum. It was thick, strong and skin-like in texture, with, of course, no visible landmarks. In the center was a pin-point perforation which closed after two visits. The hearing was so poor that the watch was not heared on contact nor the whispered voice. This is his present condition.

Case 3: P. H., 35 years old, a private patient, has had a chronic suppurative otitis media for the past seven years, said to be the sequellum of influenza. When he first came under my observation about two years ago he had a central perforation of the ear-drum involving over four-fifths of its area, a few, low-grade granulations on the inner wall of the tympanic cavity, and a slight purulent discharge. He gave a history of arrest of the discharge several times in a few years, with its inevitable recurrence when any attempt was made under treatment towards closure of the perforation and an invariably aggravated loss of substance, until it was in the above described condition, when he first presented himself to me.

The discharge was readily controlled by routine treatment for a couple of weeks, and after that he was kept under observation, but nothing was done to induce a cicatricial healing of the tympanic membrane. In a few weeks more, however, the perforation had entirely closed, leaving a cicatrix very similar in appearance to a slightly thinned and retracted, but otherwise, normal membrane. It was non-adherent and contained a small chalk spot. The hearing in this ear was poor for the whispered voice and negative for the watch on contact, but since the closure of the perforation it was steadily increased until at present he hears the watch at night several feet from his pillow and is using the damaged ear quite satisfactorily for the telephone.

The interest in this case lies in the fact that repeated attempts had been made to close the opening, each successive attempt resulting in further loss of tissue and a renewal of the discharge, while on the other hand there had been no tendency shown in the two years during which it was untreated towards spontaneous closure. At the end of this time, however, some fresh infection having again started active symptoms, the spontaneous cure began immediately upon the cessation of suppuration and proceeded to complete cicatrization with amazing rapidity.

These three cases have been reported on account of the length of elapsed time between the inception of the disease and the start of the reparative process, and also because the work was spontaneous and very slightly, if at all, influenced by treatment.

There are few spectacles more common, perhaps, in the treatment of aural disease than to see perforations of greater or less size close satisfactorily. The perforation made by the paracentesis knife will, under favorable circumstances, close completely in a few days at most, and often the greatest difficulty encountered is that of keeping it open for a sufficient length of time to allow proper drainage; small perforations occurring spontaneously and due to the rupture of the tympanic membrane from pressure of the fluid in the middle ear take a longer time to heal, but usually do so under appropriate treatment if seen before the damage done is great. Many, even with half the membrane gone, if there is no other intra-aural condition such as caries, will cicatrize completely; though the usual "cure" for a drum with so much of its substance destroyed consists of healing of the edges with a permanent perforation. This, indeed, is very often the most satisfactory ending of such a case, as the hearing is frequently still further impaired if the closure is complete.

Cases similar to the three quoted above, while perhaps not of extreme rarity, are of comparatively infrequent occurrence and seem to be worthy of note for several reasons. In each case, the disease was of long duration; in one twenty, in the other forty, and in the third seven years. An ordinary cure, consisting of checking the discharge, soon followed the beginning of treatment, but in each case, the reparative process, once started, continued spontaneously to practically a complete replacement of the drum. The length of time from the beginning of the disease until the beginning of the reparative process and the great extent of the damage done are the important features presented.

That there is a tendency latent in all tympanic membranes to spontaneously effect a cure by the closure of any perforations occurring in their substance, will, I think, be admitted by all close observers of aural disease. Every aurist of experience will recall numerous examples of the difficulty, if not the impossibility, of effecting a permanent opening in a comparatively healthy ear-drum or even one that has been thickened by some inflammatory or other process.

McBride, speaking of the attempted inducement of closure of perforations says: "In most cases such well intended efforts result in failures, while the establishment of a permanent opening in a thickened or normal membrane is almost impossible," and also that "perforations due to rupture, close quickly without treatment." And it is also a matter of common occurrence to find that the perforation made with the knife, even if it be, as it should, a large cut and not a mere puncture, will close with annoying rapidity in spite of pressure of retained fluid in the tympanum or the presence of a strip of packing, however skillfully placed in position. Perforations due to accidental traumatism come equally under this head.

On the other hand, a perforation once firmly established seldom shows a tendency towards healing while the discharge continues, and even after its cessation it is usually only in those of smaller caliber that a satisfactory cure is obtained. Politzer himself says: "Sometimes even after the space of a few weeks a great enlargement, rarely a decrease, of the perforation will be seen." He further says: "The closure of the perforation by cicatricial tissue depends neither on the duration of the discharge nor on the amount of loss of substance. In general, however, small losses of substance are more frequently closed by cicatrization than more extensive ones, but it is not every perforation that remains open for some time after the suppuration has ceased that may be considered as permanent, because occasionally, although not frequently, cases are observed in which the perforation cicatrizes several years after the suppuration has ceased. In a case reported by me, in which the membrana tympani was destroyed with the exception of a narrow fragment at the periphery, a complete regeneration of the membrane took place without adhesion to the inner wall of the tympanic cavity."

When McBride says, as above quoted, that perforations due to rupture close quickly without treatment, we must conclude that he refers to rupture from pressure of contained serum or pus, which fluid and its cause also disappear untreated, for such perforations in my experience rarely heal spontaneously while the middle ear continues in a diseased condition. In other words the membrane, from a lowered vitality due probably to the diseased condition of the ear, loses its inherent tendency to heal the rent. Such healing when it occurs, must be due to the presence of healthy granulations on the edges of the perforation leading to cell proliferation, and the formation of fibrous connective tissue which is nature's method of healing by the formation of a scar.

This process, in the vast majority of cases in which there has been extensive destruction of tissue, is self-limited and ceases before the reformation of the drum, leaving the permanent perforation with healed edges usually seen in so-called cures of such cases. When there is a recrudescence of the active process, due to some new infection, the lowered vitality of the healed edge is insufficient to resist the micro-organismal attacks and the newly formed scar tissue melts away, and frequently the destructive process is carried into the remains of the previously healthy tissue, leaving an opening increased in size. Such is more likely than not to be the result of any operative interference with the view to closing the perforation. The technic of the procedure is to freshen and stimulate the healed edges in order to try and promote such healthy granulations. Infection naturally and inevitably results, and the scar tissue with decreased reparative power and deficient blood supply is much more apt to break down and melt away than to build afresh. For infection thus started cannot be readily controlled, and the possible introduction of a virulent culture of the pus-producing organisms may be more than the tissue, far from normal, will be able to take care of.

In the case of spontaneous closure of old perforations with healed edges, after suppuration has disappeared, sometimes for long peroids of time, the process must be quite similar. The healed edges must become re-infected, through some slight traumatism perhaps, with the consequent irritation, collection of leucocytes and the other phenomena of inflammation. If such inflammation is of just the required degree of intensity to stimulate towards regeneration and not disintegration, we have the picture shown in Case 3, of a drum proceeding rapidly and uninterruptedly toward complete closure; if, on the other hand the resisting power of the existing scar is not great enough, not only does the perforation increase in extent, but frequently the remaining mucosa of the middle-ear becomes involved, resulting in a general infection of the entire cavity. That the process is frequently, possibly usually, reversed, and the primary seat of such infection is in the tympanum rather than on the edge of the drum, makes very little difference, as the process and the results are the same.

That in many respects a complete closure of a perforation is desirable cannot be doubted, as it minimizes the chances of just such an outbreak taking place. The mucous membrane of the middle-ear, never again as healthy as in its normal condition, is always exposed to fresh infection and recurrent suppuration from without through the unhealed perforation, while with a perfect closure the Eustachian canal offers the only mode of ingress for micro-organisms. Also the chance of exposure to cold and wet and other devitalizing influences is very much reduced. Of a permanent perforation, McBride writes: "On the whole, this is a less favorable result than cicatrization, because the mucosa of the middle-ear remains exposed and liable to a recurrence of inflammation," and later "on the whole, this must be considered a favorable outcome," but "the most satisfactory result is the formation of a non-adherent cicatrix." At first glance, and seen in this fragmentary manner, these quotations seem to be rather at variance. His meaning, however, is that the most desirable outcome is a completely protecting scar giving probable freedom from recurrence, but that, since this is seldom obtained in large perforations of long duration, a permanent opening with cessation of all discharge must be considered a cure.

And in spite of danger of recurrence of suppuration and further loss of tissue, this result is frequently the most satisfactory to the patient as well as to the aurist. For it is a matter of common experience that the hearing is much more frequently decreased than increased after the complete covering in of the tympanum has taken place. Politzer advises that the hearing-power be properly tested by closing the perforation with paper prior to an attempt at permanent closure; for while there is better protection with a complete membrane, there is often a serious reduction of the already impaired hearing, with the alternative danger of recurrent suppuration and consequent enlargement of the opening if the attempt at closure is made. And McBride: "It is of great clinical importance to note that the hearing-power is not necessarily improved after the occurrence of cicatrization; indeed, it is sometimes worse than before." And, in fact, in view of the accepted theory that the function of the tympanic membrane is primarily protective rather than for purposes of vibration and transmission of sound-waves, this would seem to be the natural result—that the hearing-power should be lessened. With the chain of ossicles gone or broken or ankylosed, as it usually is in these long-continued cases, there is then no direct means of communication between the drum and the fenestra ovalis and the hearing-apparatus of the internal ear. The cicatricial drum is also often thickened and adherent in part or all of its surface, giving diminished sound-conducting qualities. And since it is chiefly a protective membrane, leaving this protective quality aside, it is hard to see why the hearing should be improved by its regeneration. With the ossicular chain intact and mobile, the mucosa in a normal condition, and a scar-tissue drum in approximately the normal position, it is quite conceivable that the patient would hear better than when one or more links of the chain are broken. However, such ideal conditions must occur rarely. That they may occur is equally certain, as is, I think, shown in Case 3, in which the hearing has quite perceptibly increased and is continually improving. In Case 1 it has remained nearly stationary, while in Case 2 it has been very markedly diminished. Where a perforation has not involved the ossicles and they have not been much affected by the suppurative process, hearing seems to be more often improved.

What effect the regeneration of an ear-drum has upon the bone-conduction of sound I am unable to determine. The tuning-fork placed upon the vertex of the skull after Weber's method is, of course, heard best in the affected ear, other conditions being normal, but this does not mean that there is any actual increase of bone-conduction on that side. Also, upon being placed over the temporal bone, posterior to the auricle, the fork is heard much more readily than at the external auditory meatus. It seems possible that there may be some compensatory increase of bone-conduction in these cases, including all those in which there is any impairment of the air-conducting apparatus, but this cannot be taken up in more detail at this time.

There is one other idea that is suggested by a study of these cases—the question of the amount of vitality possessed by the cicatrized membrane. In the three cases quoted, the ultimate healing took place after long periods of time since the beginning of the infection, and at least several months after the ear was practically cured (by the formation of a supposedly permanent perforation). It seems to be quite possible that the membrane, free from suppuration and its devitalizing influence, should become stronger and more capable of resisting fresh infection, and consequently that its power of regeneration should be increased.

The fact that so many attempts at closing a perforation should prove unsuccessful would seem to show that the membrane had not yet regained sufficient vitality to produce the desired result. May it not be quite possible that a cicatricial tympanic membrane regains strength and vitality steadily after the cessation of irritation from suppuration and if taken at the right time could be more successfully manipulated? If this be so, it would seem a wise measure to allow so-called permanent perforations to rest for considerable lengths of time before active interference, in the hope of thus obtaining more healthy tissues on which to operate, due attention being paid in the meanwhile to building up the patient's health. And the fact that some, if few, of these perforations do close spontaneously should be one reason more for conservatism. These observations are offered as suggestions, merely, of the possibility of obtaining more uniformly good results by a further study of this point.

To summarize, I would offer the following conclusions: 1. Perforations of the largest size may, under certain favorable circumstances, close spontaneously and without adhesions, even years after the inception of the disease and the cessation of all discharge, as illustrated by the three cases offered above. 2. That there appears to be an inherent tendency in all tympanic membranes to heal, when the opportunity is given by the removal of the exciting cause. 3. That the reason for so many failures in restoring the continuity of the tympanic membranes is probably due to the lowered vitality of the tissues; and that by waiting before instituting active treatment and striving to build up the general health of the subject and improve the local condition, better results may possibly be obtained. 4. That the complete closure of a perforation is often of doubtful advantage, because of the decrease of hearing-power, although balanced by the better protection afforded.

2032 Chestnut Street.

PRIMARY TUBERCULOSIS OF THE MIDDLE-EAR.*

DR. CHARLES H. LONG, CHICAGO.

There is probably no disease to-day more widely discussed, not only by the physician, but by the laity as well, than the "Great White Plague." For many years it has claimed the attention of some of our greatest scientists. Koch's discovery of the tubercle bacillus in 1882 was of unprecedented value to the profession; and since that time, particularly during the last decade, marked advancement has been made in the knowledge of tuberculosis. While clinical research continues, efforts are exerted to utilize each progressive step for the enlightenment and benefit of mankind. While some theories have been so conclusively proved by experimentation and application that they have become of universal practical value in diagnosing cases and for the treatment and prevention of tubercular infection, there are still many questions open to discussion. Concerning these, we must accept the opinion of the majority until more extensive investigation and time shall prove or disprove them.

Before proceeding to the subject of primary tubercular infection of the middle-ear, which is the purpose of this article, let us take a brief survey of the present tubercular situation as it is presented to us by recent scientific workers and by personal study and observation.

There has been much disputation as to whether the human and bovine tubercle bacilli differ or are identical. Theobald Smith claimed to have found "many distinct differences." Koch[1] believed the difference to be one of type, rather than species, the position now taken by all who support a differentiation between the two groups. Koch further stated his belief that this difference is sufficient to influence the combating of the disease. Others[2] believe in the unity of the human and bovine bacilli, maintaining that, while there are marked differences in cultural growth and virulence between the two "so-called types," these types vary within themselves in the same way, to such an extent, that the difference in the groups overlaps, making it impossible to consider the one group as an entity distinct from the other. The English Royal Commission[3] confirms this instability of type and concludes that the gap between the two types is not a wide one, while Whitla[4] states that the conclusion of the "great majority of recent workers is that the human and bovine types of bacilli are identical."

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*Read at the meeting of the Chicago Laryngological Society, May 21, 1912.

Whatever the decision in this regard, there is now a general agreement upon one point,—the danger to man of infection from both types of bacilli. The English Royal Commission, in their report of 1911, state as follows: "We have investigated many instances of fatal tuberculosis in the human subject in which the disease was undoubtedly caused by a bacillus of the bovine type, and nothing else. We have compared the lesions from such cases with those obtained from parallel cases of fatal tuberculosis in which the human tubercle bacillus alone was discovered. Except for the difference in the type of bacillus found in them, these two groups of cases presented similar features; the clinical histories of the cases were alike, the cases all terminated fatally, and the lesions examined after death were found to be anatomically indistinguishable." To quote Professor Ravenel:[5] "Laboratory investigations have shown beyond question that bovine tuberculosis is transmissible to human beings and that the lesions produced do not differ in any way from those caused by human bacilli."

Considering these facts, is it then worth while to pause to discuss the much agitated question of the possibility of the human bacillus affecting cattle? It is interesting, and perhaps valuable, to know that the resistance of bovines is so great that the feebly virulent human bacilli can ordinarily have but little effect upon bovine tissue. This, however, seems not the salient point in the matter. When we observe the destructive inroads made by the bovine bacilli in the human being, does not the question of bovine susceptibility shrink into insignificance?

Again, in view of these facts, whatever its source,—water, milk, milk products, or ordinary dirt—the infection of mankind by bovine tubercle bacilli should receive our careful attention. Though the extent of danger is still in doubt, if we adhere to von Behring's[6] theory of latent infection, if we incline toward a growing conviction, that, after all, the one type may be transformed into the other after long-continued residence in a particular host with all conditions requisite and favorable to such transformation, or if we advocate the popular theory[7] that the surgical forms of tuberculosis are due to bovine bacilli, which may also produce miliary tuberculosis; in any case, we cannot but be convinced of the perils of bovine bacilli to mankind. We do not, as some accuse, "minimize" the danger of infection by human bacilli by emphasizing the work of the bovine type. We merely hold that the latter infection has a significance which may not be generally appreciated.

It is universally recognized that age is an important factor in the infection of tuberculosis. The disease is considered pre-eminently one of childhood. The physical conditions, environments, and food of the child render it practically impossible for children to escape the inception and harboring of the bacillus. Though its presence is not always immediately evident, the seed is sown and awaits only the opportune moment, favorable soil conditions and lowered resistance to begin its destructive activity. The prevention of implantation is one of the means of eradicating the tubercular evil.

We must, then, consider first the question of tuberculosis and the susceptible child. Though much is being attempted to better existing conditions, yet more should be done. We fail to see how civic governments can consider it unnecessary to improve the public milk supply in the face of such statements as the following made by the English Royal Commission:[8] "A very considerable amount of disease and loss of life, especially among the young, must be attributed to the consumption of cow's milk containing tubercle bacilli."

It has been fully demonstrated that certain tissues of the human body exhibit a greater susceptibility for the tubercle bacilli than others. The lungs offer the best example of these, and, in consequence, are most frequently primarily infected. On the other hand, some tissues are so rarely invaded that many believe that their infection as a primary condition never occurs. To this latter class belongs the middle-ear. Although Milligan,[9] after years of observation concludes that primary tubercular infection of this organ is a comparatively common condition, he meets with little support and much contradiction of opinion, some experienced otologists even maintaining that the infection is never primary, being always secondary to the disease elsewhere, usually with a pulmonary focus. While few assume this extreme position, yet the general consensus of opinion inclines toward the rarity of the condition, which is not surprising when we consider the limited number of cases reported and the great difficulties in eliminating early or latent tubercular infection.

Until the year 1903, according to Goldstein,[10] but three cases of primary infection of the ear had been reported. To these he added four. Recently others have been presented, and, although there may be doubt as to some of these being primary, the remaining unquestionable ones give sufficient proof of the existence of a primary infection of the middle-ear. Until it can be proved that some one part of the human system is immune to the invasion of the tubercle bacillus, the possibility of this conditions cannot be authoritatively contradicted.

The following case which I have to report appeals to me as one of special interest in view of the extreme youth of the patient.

G. W.; English; aged 11 months; female. According to the parents, the child appeared to have a severe cold at the age of one month. Both nose and eyes discharged for a couple of days, which was followed by a discharge from the left ear. The family physician treated the ear for some time by syringing, but no improvement resulted. February, 1910, she was brought to my clinic at the Post-Graduate Hospital by the mother. Examination revealed a profuse fetid purulent discharge from the left ear. The lining of the external auditory meatus was red and irritated. The tympanic membrane was absent. The probe revealed necrotic bone. The examination of the throat showed enlargement of the pharyngeal tonsil, which seemed to interfere with nasal breathing. This was removed. In all other respects the child appeared perfectly health The treatment applied consisted of ordinary cleansing and Politzeration until April. No improvement resulting, a smear was taken and submitted to Professor Zeit of the Northwestern University for examination. He reported the presence of tubercle bacilli in the discharge. Owing to the child's youth, it was impossible to determine the exact condition of the hearing, but it appeared little impaired. The cervical glands were not enlarged and there was no tenderness nor swelling over the mastoid process.

April 29, 1910: The radical mastoid operation was performed, only remnants of the malleus and incus remained. A mass of granulation-tissue virtually buried the stapes, the granulations extending into the antrum. All were carefully curetted away with the exception of those around the stapes. The post-auricular wound was dressed open. Owing to the rapid growth of immense, flabby granulations, healing was protracted and many curettements were necessary.

June 2, 1910: The post-auricular wound had healed and the meatus was dry. About the middle of May, the right ear was found to be discharging. Professor Zeit reported a pneumococci infection, but no tubercle bacilli. This ear was soon well.

October, 1910: The child was suffering from a cold, and both ears were discharging after being dry for four months. No tubercle bacilli were discovered, and the response was negative to both the Moro and von Pirquet tuberculin tests.

October, 1911: The last report of the case came at this time. Both ears were dry and, according to the mother, the child was in general good health. Up to the time I first saw her, this child had never been given cow's milk or artificial food of any description. She did not appear to suffer pain in her ear, while she was so noticeably good-natured that callers were impelled to remark about the attribute.

In our conclusion that this was a simple case of primary tuberculosis of the middle-ear, we considered the following: the child's youth at the period of onset of the disease; its continuous general good health; the absence of tubercular infection elsewhere, as proved by the negative tuberculin tests after the radical mastoid operation; and the ultimate satisfactory condition of the ear.

As to the source of the disease, little need be said, although the child, to the best of our knowledge, was given no cow's milk or artificial food. The ignorance and carelessness of the laity afford ample opportunities for infection. The theory of predisposition and inherited tendencies was not regarded here, as there had been no instance of tuberculosis in the family and the parents of the child were in perfect health. The case being a surgical one, suggests a bacillus of the bovine type and the attack a result of dirt infection.

While there are many possible avenues for the inception of the disease, the features of the case eliminated all but two, the Eustachian tube and the external auditory canal, with the probabilities in favor of the former.

The examination of the ear discharges determined the nature and localization of the disease and the radical operation was performed in time to arrest its destructiveness. In support of this operation, which is often criticized, we maintain that if any operation is advisable, it should be of a radical nature, especially when the disease is localized. Surgeons have regretted its omission when further developments showed that its timely performance might have prevented a fatal termination of the disease.

Despite the constant advice to be ever upon the alert for the first indications of the tubercular disease, some of us fail to recognize the infection in its incipient stage. If the physician and bacteriologist would more frequently co-operate, there would be fewer disappointing results. While this reference is but an added stroke to the well-worn nail, its insertion may be of benefit to some co-worker.

Let us not slumber while the foe invades; then become pessimistic, but "take arms against a sea of troubles, and by opposing, end them."

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15 East Washington Street.

Surgery of the Thymus Gland. Parker, *Am. Jour. Dis. of Child.*, Feb., 1913.

A very instructive paper written on a subject of which little has been known and of particular interest to the laryngologist. Many sudden deaths have been caused by an enlarged thymus producing obstruction to the trachea. Frequently this is the sole factor responsible for the compression, but at times enlarged tracheo-bronchial glands or spasm of the glottis are contributing factors in producing fatal results. Compression of the trachea is shown at autopsy by the presence of flattened trachea, associated with enlarged thymus and revealed intra-vitam by the bronchoscope, showing narrowing lumen of the trachea. The three most important symptoms are permanent dyspnea, recurring suffocation attacks and stridor; all three of these frequently occur together. Treatment is essentially surgical. Halsted.

FOREIGN BODY IN LARYNX AND TRACHEA REMOVED BY THE AID OF THE SUSPENSION LARYNGOSCOPE.

DR. SAMUEL IGLAUER, CINCINNATI.

The following case is reported because of its intrinsic interest and also because it is one of the first, if not *the* first case, of the removal of a foreign body from the larynx and trachea by the aid of suspension laryngoscopy.

Patient, M. P., female, aged 5 years, of Glendennin, W. Va., referred by Dr. G. A. Hinnen and Dr. J. Moore, of Charleston. The child suffered from cough, frequently associated with choking spells. During the past five days there had been considerable difficulty in swallowing.

Previous history:—About the middle of January, 1913, the child suddenly choked on a piece of a safety pin, which she had in her mouth. Her mother attempted to extract the pin with her finger and could feel it in the throat, but was unable to remove it. There was no further trouble until early in February, when the patient had a severe choking spell associated with extreme cyanosis and lasting about two minutes. A few weeks later there was a similar attack without any special trouble in the intervals. On several occasions the child has expectorated small streaks of blood and about five days ago the first trouble in swallowing was noticed, since which only liquids could be swallowed and some of these regurgitated from the mouth. The patient lost weight and quite recently had fever.

Present conditions:—The child is well-developed and well-nourished. She is rather hoarse and suffers with marked inspiratory as well as expiratory dyspnea. The resonance of the right chest is dimininshed but air enters both lungs freely. While under examination the child had a severe paroxysm of coughing associated with considerable cyanosis and the expectoration of muco-pus. On attempting to swallow water some difficulty was noted. A radiogram (Figure 1) taken by Dr. Lange shows a broken safety-pin (minus the pin portion) lodged in the trachea. The spring portion of the pin projects slightly into the larynx.

Operation, June 14, 1913. One-eighth grain codein, and 1/400 grs. of atropin were administered hypodermically, followed by chloroform anesthesia. Owing to the dyspnea the anesthetic was administered with considerable difficulty. A suspension laryngoscope introduced into the larynx immediately revealed the spring of the pin projecting above the vocal cords. While holding the laryngoscope with one hand (without hooking it up) the foreign body was seized with forceps and with a slight rotary motion it was set free and extracted. A slight hemorrhage followed. The recovery was uneventful, except for the fact that the child vomited a large, living, round worm on the evening of the operation.

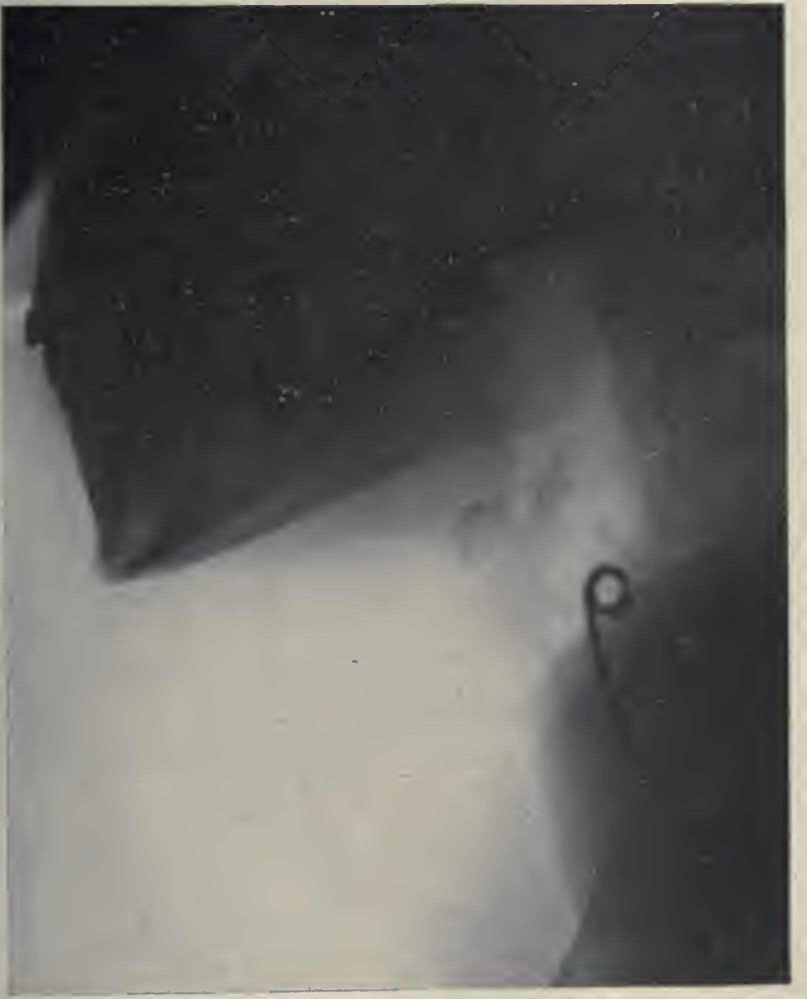

Figure 1. Radiogram showing a broken safety-pin in the larynx and trachea of a child 5 years old. The patient's shoulder is raised, interfering somewhat with the view of the clasp of the pin.

The pin measured 1⅝ (4 cm.) inches in length, and owing to its six months' sojourn in the air-passages, was partially encrusted with lime salts.

In this particular instance the suspension laryngoscope proved to be a very valuable instrument.

Lancaster Building.

DIRECT LARYNGOSCOPES.

DR. CHEVALIER JACKSON, PITTSBURG, PA.

The first form of laryngoscope used by me was modeled after the original Kirstein "autoscope" which had its transverse greater than its vertical diameter. I attached a double handle to a simple oval tube with half its periphery cut away for the distal two-thirds of its length. Then, after Killian created bronchoscopy, I added a slide at the side for bronchoscopy. Both of these laryngoscopes were used with the ordinary head-mirror, and with the Wendell C. Phillips head-lamp worn between the eyes. As I found the oval lumen less convenient than the round for working at the side instead of over the dorsum of the tongue, as I frequently wish to do, I abandoned the oval lumen for the round lumen with the slide at the side. As the edges of the slide in this position became rough in use, they occasionally cut the patient's lips, so that the slide was moved to the top and in this form, with the addition of the light carrier of the Einhorn esophagoscope, it has been in general use ever since. Recently some men who have done me the honor to work with me, have found the oval model so convenient for the introduction of esophagoscopes, bronchoscopes, and especially intratracheal insufflation tubes, that it has been deemed worth while to resurrect the oval model. The slide can be left off altogether and

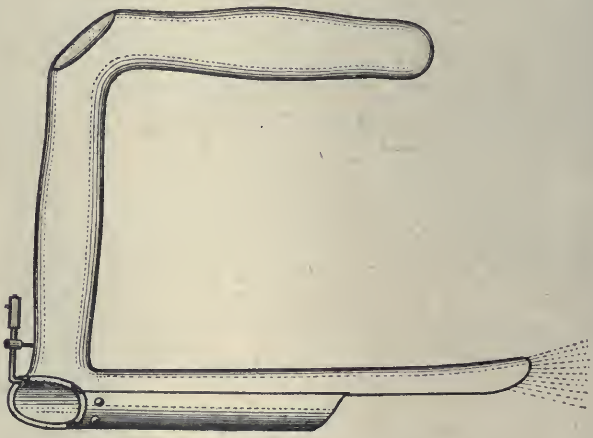

Figure 1. Form of the original Chevalier Jackson laryngoscope with Einhorn light carrier added.

thus removal of the laryngoscope after introduction of tubes of all kinds is facilitated as in the Dickinson speculum. The oval lumen giving a larger field has the additional advantage of facilitating the identification of land-marks and of affording more room for endolaryngeal operations. Probably many operators will prefer working *through* the oval laryngoscope to the method that has seemed easiest to me: namely, using the round lumen laryngoscope for vision only, the forceps and other instruments being passed alongside the laryngoscope.

Reorganization of the Septal Cartilage Following Submucous Resection. M. AL. SSAMOYLENKE. *Zeitschr. f. Laryngol.*, Vol. 6, No. 1, April, 1913.

As none of the writer's patients was scientifically enough inclined to sacrifice a portion of his nasal muco-perichondrium one year after the performance of the submucous resection, the respective microscopic specimens had to be taken from the cat. The most striking result of the experiment is the establishment of the fact that the perichondrium produces a proliferation of connective tissue. Neither the perichondrium nor any remaining portion of the cartilage produce cartilaginous fibers that show a tendency to replace the removed cartilage. The field of operation becomes transformed into a mass of scar-tissue. The preservation of the perichondrium is not a condition *sine qua non* for the success of the operation, as the same kind of scar-tissue originates from the mucous lining. The writer pleads, however, for the method of perichondrial conservatism; the mass of scar-tissue between the adjoining mucous linings would compress and destroy the numerous glands of the Schneiderian membrane, that are protected by the intervening perichondrium.

Fein, of Vienna, and others claim that a perforation is not condemnable, but desirable. The writer of this article proves that the preservation of the perichondrium is not a necessity—but a luxury. The time does not seem so far when some rhinological "Cubist" rips a big hole into the septum, while the cartilage removed is vested in a toga of perichondrium; and he will be able to prove that this is real submucous art, while a skillfully performed operation is a relic of the fossil days of rhinology. GLOGAU.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular Meeting, January 22, 1913.

JOHN F. MCCOY, CHAIRMAN.

Presentation of Specimens Showing Probable Etiological Relation of Sphenoidal Sinuses to Some Cases of Tic Douloureaux. DR. WILLIAM HENRY HASKIN.

In studying the sphenoid sinuses in many bones, the writer has been impressed with the frequency of its intimate relation to the fifth nerve and the possibility that disease of these sinuses may be a cause of trifacial neuralgia, at least in some cases, seems to be very probable, although he has been unable to find any description of such cases in the very complete indexes of THE LARYNGOSCOPE, the *Annals of Otology* and the Index of Oto-Laryngolcgy.*

That disease of the optic nerve is frequently caused by disease of the sphenoid and posterior ethmoid cells, is a well recognized fact and there is an increasing record of such cases being cured by treatment of these sinuses. An examination of the specimens presented will show that in most of them the second branch of the fifth nerve, i. e. the superior maxillary branch as it passes forward from the Gasserian ganglion and escapes from the foramen rotundum into the pterygo-maxillary fossa, is separated from the sinus by a very thin partition of bone, and in many instances lies in a distant groove on the sinus wall. In several of the specimens the sinus extends outward beneath the nerve-groove for more than half an inch. In ten of the specimens the sinus can also be seen in direct contact with the foramen ovale, through which the third or inferior maxillary branch escapes from the cranial cavity, its motor branch lying in contact with its posterior wall. As the first or ophthalmic branch lies on the outer wall of the cavernous sinus, it does not appear to come in contact with the sphenoid, although Onodi has recently described such a relationship. This clearly shows how intimate is the relation of these sensory branches with the sinus, and the following will show that the large motor and sympathetic branch of the second division, i. e., the Vidian—which leaves the facial nerve in the hiatus Fallopii and passes inward under the fifth nerve to reach the Vidian canal, through which it passes forward to escape into the pterigo-maxillary fossa where it joins the second sensory branch and the spheno-palatine, or Meckel's ganglion—also lies in very intimate relation with the floor of the sinus.

(*N. B.—Since doing this work, the writer has learned that Dr. Sluder has observed the same conditions in an article in the Transactions of the American Laryngological Association, which appeared about January 10, 1913.)

It can frequently be seen as a distinct rounded ridge, the top of which the writer has opened in several of the specimens.

Dr. T. J. Harris, who has recently returned from abroad, tells me that the younger Onodi, who is still a student, has recently published a paper on these relations, but the writer doubts the correctness of some of his observations and will report later after studying a series of wet specimens.

It is well to mention also that the sphenoid sinuses derive their nerve supply chiefly from the second division of the fifth nerve, for disease of the sinus would probably affect these nerves at any rate.

Specimens 19, 33 and 86 present undoubted evidences of disease which has caused the osteophytic formations. The writer has examined several hundred sphenoid sinuses, and is convinced that in over 90 per cent the nerve will be found to be in direct contact with the sinus. The specimens presented have been selected, however, to show the most marked relations, but they are from the writer's collection only, which is a small one, comprising about 100 sinuses.

The writer has had no clinical experience with true cases of trifacial neuralgia, and in presenting this short paper does so in the hope that the possibility of sinus disease being a cause of the neuralgia may prove to be a fact if only in a few cases, for the treatment of the sphenoid sinus is a comparatively simple procedure compared with the radical operation for resection of the nerve itself. Again, tonic and clonic spasms of the motor branch of the fifth nerve are very distressing conditions, the cause of which is described in the text-books as being very indefinite--in fact unknown. The undoubted relation of the Vidian nerve (which is the motor supply of the second branch of this nerve) to the sinus may help to clear up the diagnosis in some obscure case of motor spasm of the palate.

Dr. Sluder describes several cases of sphenoid disease where relief of pain was obtained by treatment of the sinus wall. The writer believes that many of the obscure symptoms can be attributed to involvement of the sympathetic nerve supply. Each branch of the fifth nerve receives sympathetic fibers which are derived from the carotid and the cavernous plexuses. Disease of the sphenoid would affect these plexuses, in all probability, and give rise to many of the symptoms which in reality are due to the sympathetic nerve supply.

DISCUSSION.

Dr. Smith said that the only point in which Dr. Haskin seemed to disagree with Onodi and Sluder was in regard to the involvement of the sixth nerve. In Sluder's article published in the American Laryngological Association Transactions, 1912, he claimed that the third, fourth, fifth and sixth Vidian nerves were implicated in empyema of the sphenoid. He called attention to the fact that neuralgias frequently occurred even after the sphenoidal empyema had ceased and where a large permanent opening remained in its anterior wall. He also called attention to the neuralgias subsequent to ethmoidal, frontal and maxillary sinus involvements. Dr. Smith said that he himself had observed this in many of his cases, but had attributed it to a periostitis rather than to involvement of the nerves, and he was glad to be able to formulate a more correct opinion concerning the etiology of these post-operative pains. Sluder confirmed his suppositions by injecting a solution of cocain into the sphenoidal sinus and stopping the pain. He also found that a five per cent solution of salicylic acid will act in the same way. He demonstrated that the larger the sphenoidal cavity the smaller the fissure through which these nerves run, and conversely the smaller the sphenoidal cavity the larger this fissure. Thus tending to demonstrate that an involvement of a large sphenoidal cavity might have its inflammatory condition extend sufficiently far outward to take in the sixth nerve. Dr. Smith said that he was very appreciative of having had demonstrated to him the many vagaries of conformity both in the sphenoidal, ethmoidal and frontal sinuses as had been shown by Dr. Haskin.

Dr. Douglas said that the anatomical point made by Dr. Haskin seemed to be the only one under discussion. That neuralgia of the fifth nerve arises from disease of the sinuses is not perfectly true. It is also perfectly true that after many brilliant operations on the sinus the pain continues. Such cases have often given him much trouble, and he had reached the conclusion that these cases have suffered from a certain sort of ostitis before and after the operation which does not subside. Most men have encountered such cases in the frontal sinus and in the antrum. It is unquestionably true that neuralgia of the second branch of the fifth nerve may arise from disease of any of the sinuses which come nearly in contact with it—this, of couse, through the antrum and sphenoid. The proof is very clear as this nerve has a close relation to these two sinuses. It is not in accord with his experience that suppurative disease of the sphenoid or of the antrum give rise to much disease of the other nerves. It is only where a deposit or infiltrate has occurred that the other nerves are involved—the second, third, fourth and sixth. He had seen these involved in sphenoidal sinus disease, and had seen the second branch of the fifth nerve involved in sphenoidal disease as well as in antrum disease, but always more especially when the character of the lesion was a deposit or growth rather than inflammation. Dr. Haskin had showed a very interesting specimen in which he said that the antrum was tiny and the superior maxillary was invaded by the posterior ethmoid cell to make a second sinus in the maxilla. His presumption was that the septum between the two was an ethmoidal bone septum. Dr. Douglas thought differently, but it hardly seemed fair to discuss the specimen, for it was incomplete. In his opinion there was a true maxilary antrum divided by a septum, and not an anterior ethmoid cell.

Dr. Carter inquired whether Dr. Haskin considered the deformity shown in many of the specimens presented as being a deviation in the anatomical conditions, or whether they were pathological, that is, due to a proliferating periostitis.

Tracheal Obstruction Due to Thymus Enlargement: Skiagraph. Dr. John E. MacKenty.

The patient came to the clinic about a month and a half ago, with practically the same condition shown to-night. The child was breathing with considerable obstruction and was very anemic. It was normal at birth, but shortly after birth it began to lose weight, and this condition progressed until mercurial inunctions were given, after which the child recovered its health.

In August, 1912, the child was intubated for diphtheria. Following this the obstructed breathing was noticed. The tube was worn for six weeks. The radiograph shows distinctly thymus enlargement.

It was his intention to use the bronchoscope to determine positively the nature of the obstruction but the parents refused to leave the child in the hospital. Therefore it was doubtful if the obstruction was due to thymus pressure or to intra-tracheal stricture. The physical examination of the chest showed in right bronchus partial obstruction which was a point in favor of thymus pressure.

Atresia of the Pharynx; Operation; Polypoid Degeneration of Mucosa: Recovery With Good Function. Dr. John E. MacKenty.

Dr. MacKenty said that the patient had first come to him two and a half years ago from Dr. McCullagh, at which time he had published a new operation for atresia of the pharynx. The girl had not breathed through her nose since childhood, the obstruction being probably due to an attack of scarlet fever. When she first came under observation the nose was filled with scabs. The operation which was done relieved her breathing entirely, in spite of the fact that her palate lies against the posterior pharyngeal wall. Some of the men who examined her did not think there was any opening, but one could be demonstrated which would admit the second finger with ease. This is a proof in favor of the operation devised by Dr. MacKenty, and shows that a cure can be effected in such cases in spite of the fact that the palate lies all the time during the healing process against the posterior pharyngeal wall.

An interesting fact in this case is that following the operation her nasal mucous membrane began to hypertrophy, and after a few months a polypoid degeneration developed which had to be treated. The inferior turbinate was so enlarged that it almost completely obstructed the nose. Now the mucous membrane is functionating again and has become practically normal, and she has a very good functionating nose. This case shows that the mucous membrane of the nose which had never functionated had become over-stimulated and had degenerated; but becoming accustomed to the new condition of things, had eventually become normal. She has had no contraction of the pharynx and it seemed only fair to assume that the function will remain just as shown, giving her a sufficiently large opening for normal breathing.

In reply to a query from Dr. Quinlan as to whether there was any obstruction before the intubation Dr. MacKenty answered in the negative.

DISCUSSION.

Dr. Cocks said that Dr. Law was certainly to be congratulated for securing the excellent skiagraph showing the thymic enlargement so clearly. It is exceedingly difficult to get a good plate of the thymus gland. He then told of a case seen in Dr. Chappell's clinic, where a child was sent to a well-known x-ray man who took a plate which looked like a good one, yet no thymus enlargement was shown. The child was 2 years of age when the plate was taken. It is interesting to compare that plate with Dr. MacKenty's. Warthin states that the heart and great vessels in a normal child form a shadow which looks like a flask—the body of the flask is represented by the heart, while the narrow neck is represented by the great vessels. The thymic enlargement in Dr. MacKenty's picture is shown by the widening of the shadow corresponding to the neck of the flask. Warthin, Satterlee, Chevalier Jackson and others have reported thymic enlargement shown by the x-ray.

The influence of status lymphaticus on diphtheria and other infections is very interesting. Daut states that in a series of patients dying from diphtheria over 25 per cent had status lymphaticus. He states that "distinct modifications of the clinical picture of the disease (diphtheria) were present in these cases. In some instances the patients had a hoarse barking cough and a hoarse voice associated with attacks of spasmodic suffocation, weakness of the heart, and rapidity of the pulse. These attacks were altogether out of proportion to the severity of the membrane formation as shown post-mortem. In other cases, the patients died suddenly, having shown no unusual symptoms during life referable to status lymphaticus." It would be a great chance if Dr. MacKenty could obtain permission to operate upon this patient. If it could be proved that the tracheal obstruction was not caused by the obstruction of the larynx itself, it would be a great opportunity to make an incision and pull up the thymus gland, and remove part of it or anchor it to the end of the sternum.

Dr. Haskin said that Dr. Cocks had spoken of Dr. Chevalier Jackson's work. To his own knowledge Dr. Jackson had operated on ten cases. The chief difficulty has been the danger of death from suffocation, which Dr. Jackson has overcome by putting in a tracheal tube, and so averting any possible spasmodic contraction of the trachea and death of the patient. The cases had made wonderful recoveries.

Dr. Carter said that in 1904 he had a case of enlargement of the thymus gland, terminating in death. It was a very interesting and instructive case. The patient was a child, 5 weeks of age, and was brought to the hospital in a cyanosed condition, with difficulty in inspiration and expiration. It was evidently at the point of death, and immediate tracheotomy was performed, but without relief, for the tracheotomy tube was not long enough to reach beyond the constriction and the child died from strangulation about thirty-six hours after the tracheotomy.

Now Dr. MacKenty's case, from the general history and appearance of the patient, would seem to be due to some cicatricial constriction in the trachea itself. The general appearance of the case did not seem to indicate thymic enlargement. When a thymus causes asphyxia it does so by pressing on the trachea opposite the manubrium at a point corresponding to the second dorsal vertebra. This space is very small. The thymus increases in size up to the second year and symptoms of pressure are more apt to develop during the first two years of life. In the case which he had referred to, the thymus was very large and the constriction of the trachea was very great. In one case operated upon by Rehu the thymus was lifted up and stitched to the anterior part of the sternum. The patient recovered.

From a mechanical point of view the two chief causes of death are asphyxia—which occurs when the enlargement of the thymus is chiefly in an antero-posterior direction—and syncope due to pressure of the gland on the great vessels of the heart, chiefly the pulmonary artery. In these instances, the enlargement of the gland is chiefly downward. Many sudden deaths in infants, and in some cases where the patient dies suddenly in the first stages of anesthesia, are caused by thymic hypertrophy.

Dr. MacKenty said that it had been his intention to take the child into a hospital and perform a bronchoscopy to determine whether there was a tracheal obstruction. He was not yet sure that it was not an intratracheal condition, but one point which inclined him to think otherwise was that the physical signs suggested pressure on the left bronchus. If the pressure on the left bronchus was sufficient to partially obstruct it then he was inclined to favor the view that it was due to thymus obstruction and not to contraction of the trachea. He had also intended, if the thymus were at fault, to pull the thymus upward and if practicable remove it, or at least to bring it up into the neck to relieve the pressure, but the parents had objected to any manner of operative procedure.

Some of these cases have been relieved by x-ray treatment. He intended to try to induce the parents to bring the child back to the hospital and have it undergo treatment by Dr. Law.

Case of Hodgkins Disease With Pressure Symptoms on Larynx and Esophagus. Dr. William A. Scruton.

Female, aged 35. Family history, negative. Personal history, Russian; general health excellent up to the past year, during which there has been an increasing loss of weight and consequent weakness. Twelve years ago while having trouble with the teeth, swelling appeared on right side of neck and pus was finally discharged. Nine years ago moderate hypertrophy of glands on right side of the neck was again noticed. The condition remained quiet until one year ago when the hypertrophy became active and has progressively increased. X-ray applications ineffectual.

Examination: Markedly asthenic appearance; skin is dry and of a peculiar color suggestive of bronzing. Large, tense, deeply seated mass at the anterior border of the sterno-cleido-mastoid muscle, midway between the upper and lower attachments of same; right side of neck. Numerous small glands can be freely rolled under the finger; they are situated in the anterior and posterior triangles of either side of the neck. The superficial glands elsewhere are not palpable. Examination of mouth shows the right tonsil hypertrophied and inflamed, displaced forward and inward by a mass which bulges the lateral pharyngeal wall to an extent seriously interfering with deglutition. Respiration labored when there is slight exertion.

Chest examination: Fluid right side, aspiration produced a clear straw-colored fluid which the laboratory pronounced sterile. X-ray shows no hypertrophy of the glands in the mediastinum. No hypertrophy of liver or spleen noted.

Blood examination: Several examinations were made; the following is typical: Erythrocytes, 6,376,000; Leucocytes, 9,000; Hemoglobin, 80 per cent; large mononuclear lymphocytes, 6 per cent; small mononuclear lymphocytes, 13 per cent; polynuclear neutrophiles, 81 per cent; Wassermann reaction, negative in each of two tests.

Dr. J. G. Callison, pathologist at the Manhattan Eye, Ear and Throat Hospital, reports on specimen of gland removed from neck as follows: "In this tissue the typical structure of a lymph node is lost, although the number of lymph cells is not markedly reduced. With the loss of structure there is a considerable degree of fibrosis present. The tissue also contains a number of eosinophil cells of the type appearing in Hodgkin's disease."

I believe the tissue shows sufficient of the changes present in Hodgkin's disease to justify such a diagnosis. Dr. W. G. MacCallum, professor of pathology in Columbia University Medical School concurs in this opinion. The patient has been in the hospital ward twice. The duration of each occasion being about two weeks. The temperature invariably showed an afternoon rise to an average of 101.5°; on one occasion it reached 102.5° never higher.

This woman has passed out of my control, but when last seen was failing rapidly. Complained then of increased weakness, dysphagia and dyspnea.

Dr. H. D. Rolleston in *The Practitioner*, 1911, gives the following prognosis.: Death usually results within three years, due to pressure on vital organs (trachea, bronchi or great vessels) or to toxemia, anemia or asthenia. A secondary infection with tuberculosis may also terminate life."

DISCUSSION.

Dr. Douglas accepted the diagnosis and said that he would like to call attention to his own recent treatment of some of these cases, in which marked improvement had resulted from the administration of diphtheria anti-toxin. In some instances the glandular swellings had disappeared and in others had markedly improved. The improvement, however, did not last. Experiments are now being made with another serum in the Post-Graduate Hospital, and so far the reports are very satisfactory, but would require much testing.

Dr. Lederman asked if repeated injections had been given; to which Dr. Douglas replied that only small immunizing doses had been given.

Dr. MacKenty said that an interesting point was the differentation of the diagnosis between Hodgkin's disease and sarcoma. He had had two cases of sarcoma which clinically resembled it. It was often difficult, however, to make the diagnosis even after pathological examinations had been made.

Dr Dwyer said that he had an opportunity of seeing the specimens of tissue and the difficulty of making the diagnosis in the first instance was due to the fact that the first specimen was practically structureless being simply broken-down and degenerated glands showing no characteristics of any kind. The second specimen showed the characteristic of Hodgkin's disease, although the eosinophilia was not as marked as usual and on the whole the growth would be considered an atypical one.

Regarding treatment, Dr. Dwyer said he would advise a trial of colloidal copper, as this was the agent they were using for malignant growths at present and this condition, so far as we know, is rather allied to these growths. The results from the use of collodial copper have been rather encouraging but the series was too small and the time elapsed since treatment too short to judge of any permanent results.

Dr. Scruton asked for suggestions in regard to the treatment of the case. Should the patient be allowed to die without doing anything, or would it be well to attempt to remove some of the disease and keep her alive for a while. He was afraid that if she were put under an anesthetic the effect would be fatal.

Case of Sarcoma of the Antrum. Dr. Beaman Douglass.

Dr. Douglass said that it was only two months since he had operated in this case, and he believed that the man might be considered well. It was a small, round-celled sarcoma which involved the antrum, the sphenoid, and the ethmoid. The operation was done without tying the carotid artery, and it recurred immediately. Two weeks later another operation was performed, and the recurrence entirely removed, and he felt confident that the case might be considered cured. It was now two months since the last operation. The carotid artery was tied, the nose split, and the entire maxillary bone removed.

Epithelioma of the Soft Palate. Dr. Beaman Douglass.

Dr. Douglass said that this was another interesting malignant case of the right soft palate, involving the anterior pillar of the fauces. The diagnosis of epithelioma was made by the microscope. The growth was removed two months ago by a radical operation, after tying the carotid artery. He believed that this case also might be considered entirely well. He might be unduly optimistic, but he felt convinced that the patient might be considered cured. There was no question in regard to the correctness of the diagnosis in either of these cases.

DISCUSSION.

Dr. Smith said that it was farthest from his desire to cast a shadow upon the supreme optimism of Dr. Douglass, but that he had never seen a case of sarcoma of the nose involving the ethmoidal region which did not recur after operation, irrespective of the apparent small extent of the involvement at the time of examination. He thought it possible that the present retrograde movement of the malignant involvement was in part due to the fact that the nourishment of the tumor had been cut off by the ligation of the external carotids. In the case of epithelioma of the palate he thought there seemed to be too much induration and inflammation adjacent to the wound to claim that recurrence was improbable. He said that six or seven years ago he had himself had a case of epithelioma of the palate upon which it was necessary to operate three times, and at the last operation the entire soft palate and lateral pharyngeal wall of the right side had been removed. He had shown this case at two different periods to the section, the first time some months after the last operation and the second several years after it. After that he had followed the case for at least five or six years and there had been no more recurrences. The man's profession was that of a cooper, and it was necessary for him to blow into the bunghole of the barrel to see if the barrel was air-tight. For a long time after the operation he was unable to do this owing to the fact that the air would escape through the nose, there being no prevention by means of the soft palate. But nature had after a while met all the requirements of the case by excessive hypertrophy of the posterior tips of the turbinates, and he was able to resume the full functions of his calling. Dr. Smith said that it seemed too soon to assume that a cure had been effected in either of the cases presented by Dr. Douglass.

Dr. Lederman said that he wished to offer a word of encouragement to Dr. Douglass, for he himself had had a somewhat similar case, a man, 26 years old, in whom he had injected Coley's serum a number of times, which brought on a decided reaction at each treatment. He had later turned the case over to Dr. Dawbarn, who was at that time testing his operation of starvation by ligating the external carotid arteries. The growth receded probably a third, if not more, after the double ligation. This growth had extended into the antrum and posteriorly into the pharynx, involving the spenoidal sinus on the left side. A radical operation was done later and the whole left superior maxillary bone, part of the spenoid and ethmoidal cells were removed; it was a very bloody operation in spite of the ligation of the carotids. The man made a good recovery, and seven or eight years after the original operation the growth had not recurred. The diagnosis (small round-celled sarcoma) was made by the microscope. This man was afterwards fitted with an artificial palate and upper jaw, and got along very comfortably.

Dr. Smith said that the Dawbarn operation consisted not in the ligation of one but of both external carotids, and the shutting off of all the blood-supply above the ligation. That if only one carotid was tied, the circulation would take place from the opposite side. He said that the injection of Coley's serum unquestionably created a fibrosis in malignant tumors which tended to lessen hemorrhage. That in a case of sarcoma recently under his care Coley's fluid had been employed for a long time and that a major operation for removal of the growth, not for the purpose of cure, but for the relief of pain, had resulted in very much less hemorrhage than in an operation several months prior for the removal of a specimen for examination.

Dr. MacKenty said that he had operated in many cases of sarcoma and those that had ultimately recurred were very few. One case recurred after five years, and during that time the patient was apparently perfectly well. The disease was evidently dormant during that time. It is common for sarcomas to remain apparently well for twelve or fifteen months after operation, or longer. One extensive case of sarcoma in a child was recalled by what had been said of Coley's serum. The child was in an inoperable condition and developed an attack of erysipelas, and a month or six weeks later the entire mass had disappeared. It subsequently returned and proved fatal.

He was not at all optimistic in regard to the non-recurrence of sarcomas, for he regarded them the most malignant tumor we have to deal with.

Dr. Simpson said that his experience showed that these tumors almost invariably recur, even though this may be delayed for some time. There must be an interval of at least a year before beginning to hope they are cured.

Dr. Cox said that his experience, like that of the others who had spoken, inclined him to believe that one must expect recurrences almost always. A case may go on well for a time, but there is usually a recurrence. There have been some notable exceptions, and he recalled one case which he operated upon about seven years ago. The patient was a young man of about 17, with a sarcoma of the tonsil, which was removed. The glands of the neck were also involved. The pathologist pronounced the tissue from both tonsils and glands to be sarcomatous without doubt. The young man, however is still well to-day, and seems strong and healthy, with no evidence of a return of the growth.

Dr. Hurd told of a case of adeno-sarcoma on which he had operated a year and a half ago, with no recurrence to date, but he did not feel at all optimistic and would not be surprised at a recurrence. He had cut out every bit of the gland-bearing tissue except the vestibule and left frontal sinus, and cleaned out the bone thoroughly. It all filled with connective tissue and the patient has a fairly good functionating organ.

Two years age he saw a young man who had had a growth in the ethmoidal region. He probed through the brain for an inch and operated through the orbital roof, doing practically the Killian operation. The growth in the nose was cleaned out thoroughly and flush with the dura, and one could go through the frontal lobe of the brain for about an inch. The tissue was examined by Dr. Jonathan Wright, who said positively that it was not syphilis and was probably sarcoma of the brain, but the young man is still alive and apparently healthy. One can see a few nodules in the nose apparently healed-over granulations. He has never had syphilis, but for precaution had been on anti-syphilitic treatment for a year.

Dr. Carter said that he was convinced that the number of recurrences in cases of malignant diseases would be greatly reduced if it were generally borne in mind that the tumor itself should not be cut into or in any way injured before the operation. The incision should always be made wide of the area affected by the disease, for if the growth itself is cut into, the cells are quickly carried beyond the affected area by the lymphatics and blood-vessels—this accounts for a great many recurrences.

(To be continued.)

BOOK REVIEWS.

The Practice of Dentistry. A Practical Treatise Upon the General Practice of Dentistry, Operative and Prosthetic, Exclusive of Orthodontic Practice. By LEO GREENBAUM, M. D., D. D. S., and MAX GREENBAUM, D. D. S. Philadelphia. Pp. 836, with 350 illustrations. D. Appleton and Company, New York and London, 1912. Price, $6.00.

This practical treatise on general dentistry exclusive of orthodontic practice has been designed to meet the requirements of the active practitioner who often fails to post himself on the recent research and advanced methods, because he has neither the time nor the inclination to study the stereotyped text-books intended for beginners in dentistry.

The authors have spared no efforts to present in this volume an exhaustive yet concise record of the accepted advanced standards of dental practice.

The book is divided into two sections, the one comprising twenty-four chapters on operative dentistry, the other twelve chapters on prosthodontia.

The sub-classification is excellent, the typography and illustrations admirable, and the subject-matter is presented in terse form. This book is distinctly a credit to the authors and to the publishers.

A Modern Treatise on the Legal Rights, Duties and Liabilities of Physicians and Surgeons. By HUGH EMMETT CULBERTSON, of the Ohio and New York Bars, Contributing Editor to the Lansing, Ohio, "*Encyclopaedic Digest*," Notes on the American Decisions and Reports, and many other legal publications. Lea & Febiger, Philadelphia and New York. 1913. Price, $3.00.

This treatise is written by a lawyer of experience and one who has an intimate association with medical men and medical practice. It deals with the duties, rights and liabilities of medical men toward the public as settled by law, and also of the legal relations of the regular profession to the practitioners of the many other schools now in vogue.

It is the duty of every doctor to inform himself concerning his relation toward the public and to his fellow-practitioners.

There are interesting chapters on compensation, the legal collection of fees, suits for mal-practice, criminal liability of the surgeon, the expert witness, collection of professional accounts, etc.

The well-established physician who has bought this knowledge in the costly school of experience will appreciate the value of this book and place it on his ready reference shelf.

Problem of Race-betterment. By J. EWING MEARS, M. D., LL. D. Philadelphia. Pp. 45. Wm. J. Dornan, Philadelphia, 1910.

This volume consists of a series of essays on the question of relief measures for certain forms of mental, moral and physical degeneration, for the prevention of that large number of defectives that lower our race standards and are a constant menace to future generations. The legal and medical aspects of reducing that large army of the unfit is also discussed.

The book is of value to the student of eugenics and can be read with profit by every thoughtful person.

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ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to The Laryngoscope.)

THE RECENT PROGRESS OF ENDOSCOPIC METHODS AS APPLIED TO THE LARYNX, TRACHEA, BRONCHI, ESOPHAGUS AND STOMACH.*

DR. CHEVALIER JACKSON, PITTSBURGH, PA.

Killian, the father of bronchoscopy, three years ago wrote: "A vast amount of material has accumulated which must be tested, observed and arranged." If I shall fail, as doubtless I shall, to report the extent to which this material has been tested, I can but point to the next sentence by the same great master: "Day by day this scientific data increases so that soon it will be difficult to keep pace with it. Knowing the enormousness of the task and my inability to fulfill it, as well as to prevent overlapping, it was thought best to leave to my co-reporter, Prof. Killian, the difficult task of reviewing the recent European progress of endoscopy. To report all, even of American recent endoscopic progress, would be impossible in the present limits of time and space.

Who shall do endoscopy of the larynx, tracheo-bronchial tree, esophagus and stomach: For the purpose of collecting statistics, I sent out circular letters of inquiry to 380 laryngologists in America. I did not include European workers because my distinguished co-referee, Prof. Killian, will report to you the European progress in endoscopy. The majority of the 380 were examining the larynx by direct laryngoscopy, but only seventy-nine of them had attempted bronchoscopic or esophagoscopic foreign body work. Only thirty-five of the laryngologists cared to do this work, stating that they believed it should be referred to a few men. The views of many are well expressed in the following letter from Dr. Derrick T. Vail: "I have referred such cases to those who are equipped for the work. I think this is a specialty within the specialty which is better followed by one or two men in such a community as this (Cincinnati) rather than by all." One man had spent three months in a European clinic studying, among other things, edoscopic technic. After coming home, he made the serious error of not doing any tube work at all for over a year, had no trained assistant or nurse and a numerically insufficient armamentarium, which he brought home with him. He concludes his letter thus: "I have only had two cases, both esophagoscopy for coins near the cricoid. Both patients died on the table. I shall never do another esophagoscopy, because I do not see a sufficient number of cases to do good work." The emergency character of many cases demands that each large city shall have at least one man properly trained and equipped for any sort of peroral endoscopy; but every laryngologist should be able to examine the larynx of every child by the direct method without any anesthesia, general or local, because the direct method is the only way in which the very young child's larynx can be examined, and it is but a platitude to say that a laryngologist must be able to examine the larynx. When it comes to endoscopy of the tracheobronchial tree, to do the work promptly, skillfully and safely, and always through the mouth, requires not only the facile hands, but, like the best modern surgery, a trained organization which shall have such constant training as to do its work well. More than this, in tracheo-bronchoscopy, unique in the whole realm of surgery, promptness and precision often makes the difference between the life or the death of the patient. There must be no failure at a critical moment upon the part of any factor (person, instrument or apparatus) in the organization. It is such failure that makes the wide difference between the percentage of mortality shown in the statistics of the work of the occasional operator and of the large clinics. In esophagoscopy the same holds true in regard to foreign-body work, where lack of skill may cause dangerous dyspnea, which, with lack of promptness and precision, may prove fatal. In the diagnosis and treatment of disease, the same degree of skill is necessary for safe introduction and promptness and precision are necessary in order that esophagoscopy for diagnosis will be advised as a simple and minor procedure of slight discomfort to be resorted to on the slightest indication. In no other way can esophagoscopy accomplish its full measure of usefulness in the diagnosis and treatment of esophageal disease, and especially of pre-cancerous diseases such as leucoplakia, abdominal and hiatal esophagismus, stasis, erosion, ulceration, and also in the early detection of malignancy.

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*Prepared by request for the International Medical Congress, London, August, 1913.

Radiography in its relations to peroral endoscopy: Excellent progress has been made in the radiographic localization of foreign bodies. This is especially true in regard to the technical improvements which have rendered possible the practically instantaneous radiography, as it has quite recently been recognized (Tilley and others) that an instantaneous radiograph will often show foreign bodies not visible with longer exposures. A deep inspiration held during the exposure creates an artificial emphysema which causes the foreign body to show, because it lessens the density of the thorax; though it must be borne in mind that the more horizontal position of the ribs and the displacement of the viscera, including the foreign body, must be allowed for in the localization. The steady

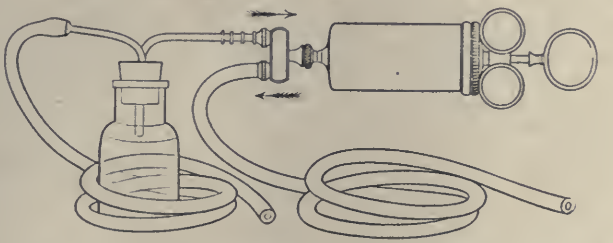

Figure 1. Aspirator for esophagoscopy with additional tube connected with the plus pressure side for use in case of occlusion of the esophageal drainage tube.

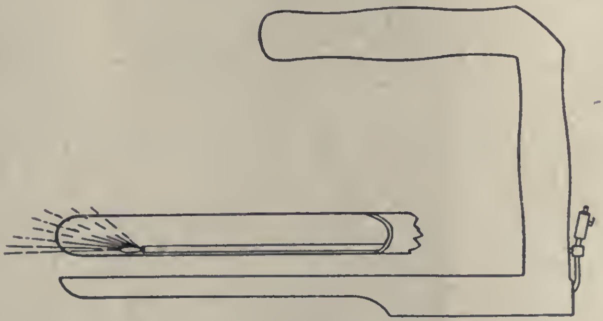

Figure 2. Esophageal speculum for foreign body work and for operations upon the upper end of the esophagus.

progress made by the radiographer in lateral radiography of the thorax has not only been of great aid in the general localization from bony and visceral landmarks, but also in conjunction with the caliper-guide suggested by Dr. Boyce and perfected by the author. In conjunction with the lateral radiograph the caliper-guide will bring the point of the bronchoscope in close relation with the foreign body, thereby greatly diminishing the number of small bronchial tubes to be searched; this method being used, of course, only in case of small foreign bodies which have fallen into a very small bronchus far down or far out near the periphery of the lungs. The lateral placement of the point of the bronchoscope depends upon a mark placed on the skin by the radiographer who determines the point by an antero-posterior radiograph. Another aid in this same class of difficult cases has been used by the author. A positive transparent film of the tracheo-bronchial tree is laid over the negative of the patient showing the foreign body, when the foreign body will show through the transparent tracheo-bronchial tree of the overlying positive film. In placing the film, bony landmarks are not reliable and visceral landmarks are necessary. The two important visceral landmarks are the dome of the pleura and the dome of the diaphragm. It is needless to say the tracheo-bronchial tree necessarily lies in the body of the lung between these two landmarks, and lines corresponding to these are placed on the film. Twelve photographic enlargements and reductions are on hand so that a film of the size (rather than age) is available for any sized patient. All this work is done, of course, in a darkened room, with a strongly illuminated shadow-box; and in the event of the foreign body showing very faintly on the radiograph of the patient, it is strengthened by an ink-mark on the uncoated side of the negative, which can be readily erased afterwards if desired. One source of error, of course, is that the positives of the tracheo-bronchial tree are made from the tracheo-bronchial tree of a cadaver, whereas bronchoscopic study of the tree shows that it is not quite in the same position in the living. I have found the injection preparations of Bruenings to come nearer those of the living tree than any other that I have been able to find, and therefore I have used them in making the positive films. It is customary in the interpretation of a radiograph, when one lung shows dark and the other light, to consider that the dark side contains the foreign body which has occluded the main bronchus with perhaps compensatory emphysema on the opposite side. Iglauer reports a very interesting case where this reading was erroneous because the foreign body had, by a valve-like action, imprisoned more air in the obstructed side, so that there was a very marked emphysema shown by the radiograph on the obstructed side. The negative report from the radiographer remains to-day as it always has been. unreliable, because many bodies are not opaque to the ray, and, moreover, the foreign body may not be the same as that of which we get a history. In addition to this, even metallic bodies at times do not show. For instance, in one of the author's cases, that of an enormous woman of 53, expert radiographers, for a period of two years, made quite a number of exposures, but were unable to demonstrate a tack which they finally demonstrated to be present, and which the author removed. Such occurrences will doubtless be less and less frequent because of the steady advance in the technical perfection of radiography. A number of recent cases have made it quite clear that it is necessary to do a bronchoscopy if there is any reason to expect from the history that there is a foreign body located somewhere in the air-passages or the esophagus, notwithstanding a negative ray finding and a total absence of symptoms, for it is remarkable how tolerant the trachea, bronchi and the esophagus become to the presence of foreign bodies after the initial symptoms immediately following the accident have subsided. Radiography has been of great aid in the study of diseases of the esophagus, but it has been clearly demonstrated that they are apt to be quite misleading if taken alone without endoscopy. For instance, one case sent to the author for the removal of a diverticulum, was found not to be a diverticulum at all, but an enormous dilatation of the entire esophagus due to an abdominal esophagismus. This dilatation was filled with food so that when the bismuth porridge was swallowed it simply lodged on top of the mass of food. The food did not throw a shadow, but the porridge did in a mass

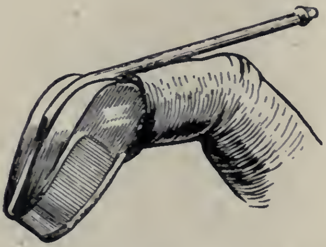

Figure 3. Thimble bite block originally suggested by Boyce and improved by McKee and McCready. Ether is insufflated through the tube, if needed, for esophagoscopy. The tube on the bite block is not used in bronchoscopy.

closely resembling a diverticulum. On introduction of the esophagoscope, nearly two quarts of stale food was removed. Furthermore, to attempt to make a diagnosis and treat diseases of the esophagus on the ray findings alone, or supplemented with laboratory and blind methods is to ignore the greatest of recent progress in the treatment of diseases of the esophagus. It is not enough to know that there is a diverticulum, a dilatation or a spastic stenosis. To do effective work, it is necessary to know the condition of the mucosa and especially the lesions in the abdominal esophagus, and the cardial portion of the stomach. There is absolutely no way of knowing these without the esophagoscope.

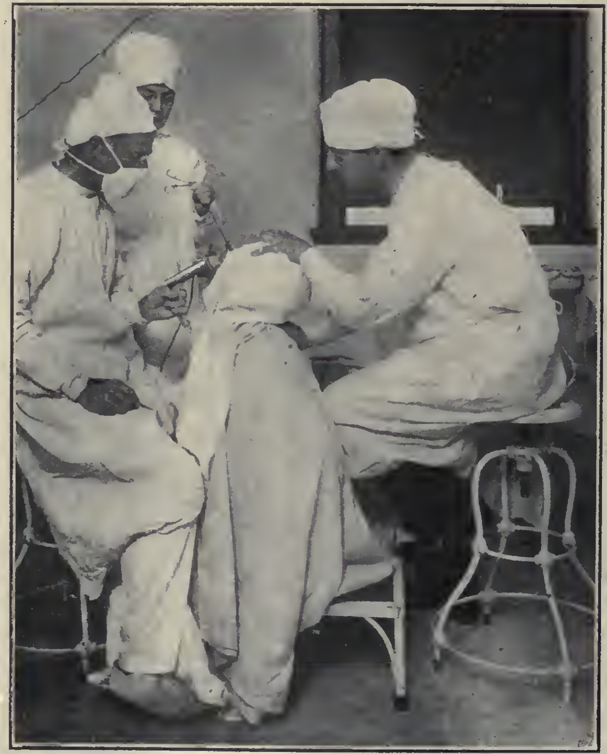

Figure 4. Showing the best position of the operator, patient and assistant for direct laryngoscopy on adult patients under local anesthesia. The sitting position of the operator renders laryngeal exposure easy for patient and operator; whereas the usual standing position of the operator throws the patient into a posture that renders laryngeal exposure difficult as well as throwing the trachea out of line. The assistant's right index-finger is used for counter-pressure either backward or laterally, as needed.

Instruments: Quite a number of new forms of illumination and new tubes have been devised, and they practically all have done good service in the hands of skillful men. In the statistics which the author gathered, there was practically no difference either in the mortality or the percentage of successful removals of foreign bodies between the different kinds of tubes and illumination. Far more depended on the individual skill of the operator. Doubtless the best instrument for each operator is the one with which he has practiced most. Efforts to produce jointed and angular esophagoscopes and gastroscopes continue, and all such should be encouraged (provided great care is exercised) because all effort results in increased attention to the esophagus and its diseases. There is absolutely no hope that any esophageal instrument will ever be devised that will be safe unless carefully used, because even the soft rubber stomach tube has been known to cause fatal perforation. One of the most successful of the angular esophagoscopes is the indirect one of Lewisohn. I saw it passed upon a patient with practically no discomfort and the view was good. In its present

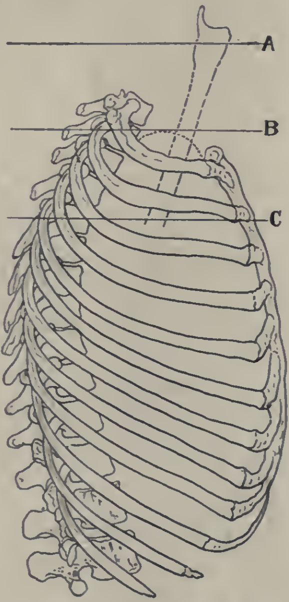

Figure 5. Schematic illustration of normal position of the intra-thoracic trachea, and also of the entire trachea when the patient is in the correct position for peroral bronchoscopy, such as the original Kirstein position, or that shown in Figure 3. When the head is thrown backward (as in the usual or in the Rose position) the anterior convexity of the cervical spine is transmitted to the trachea of which the axis is no longer straight.

form it is, of course, adapted to simple inspection, not for the removal of foreign bodies or specimens, nor for probing or palpation, wiping or medication. For dealing with foreign bodies and disease high up in the esophagus, the author has found exceedingly useful, an elongation of his laryngeal speculum. This instrument is 25 cm. long for use in adults, and with it there is very much less risk of overriding foreign bodies in the high situation than with the esophagoscope. This esophageal speculum has also been found particularly useful for the breaking up of those rare congenital webs first described by Mosher and Clark, and of the high strictures of the esophagus which result from decubitus ulcers resulting from the mixed infections complicating enteric fever, scarlatina, diphtheria and like conditions and the breaking down of gummata. These webs and strictures yield quite readily to the breaking up and stretching with this speculum. Some few forms of cicatricial stenoses, especially those following the breaking down of gummata, have a tendency to recur and it is necessary to repeat the treatment frequently, but in most of the conditions, a very few treatments are sufficient, a divulser being only occasionally required. Yankauer has perfected an aspirator for the removal of secretions operated by a small exhaust fan in connection with an electric motor. He has also used a jet of compressed air blowing sidewise across the proximal tube-mouth to blow away the secretions coughed out by the patient to prevent them soiling the mirror of the Bruenings lamp or Kirstein head-light. It certainly is a comfort to see the stream of coughed-up secretion being projected off sidewise instead of getting it in one's face. Ingals uses an electric aspirating pump originally devised for massage of the ear. A number of endoscopists are using various forms of aspirators attached to a water faucet. In using this, it is necessary to exercise precaution if commercial circuits are used for illumination, lest the current be "grounded" through the water pipes, especially when withdrawing long aspirating tubes. The author prefers, for esophagoscopy, an aspirator in the wall of the esophagoscope or gastroscope, the exhaust being by an aspirating syringe. The positive pressure side of the syringe also has a soft rubber tube, and in case the aspirating canal in the wall of the esophagoscope becomes obstructed, a change of the soft rubber tube from the negative pressure to the positive pressure will force out any clots or other obstructions which may have entered the canal. The author does not use any form of aspirator, either in the wall of the tube or otherwise in the bronchoscope. He has found that the best of all ways to remove abundant secretions and blood during bronchoscopy is to insert a large swab on the usual long Coolidge sponge-carrier, pushing it down until the large gauze sponge goes beyond the distal end of the bronchoscope. Then the patient will cough the bronchoscope full of the fluid, and the withdrawal of the carrier and swab will pull up often as much as an entire tube full of secretions at a time, just as the water above the plunger of an ordinary pump will lift the water which is above the plunger. This is one of the advantages in working under slight anesthesia or none at all. Contrary to many of the statements that have appeared, the form of aspiration used by the author has absolutely nothing to do with distal illumination. There is no form of il-

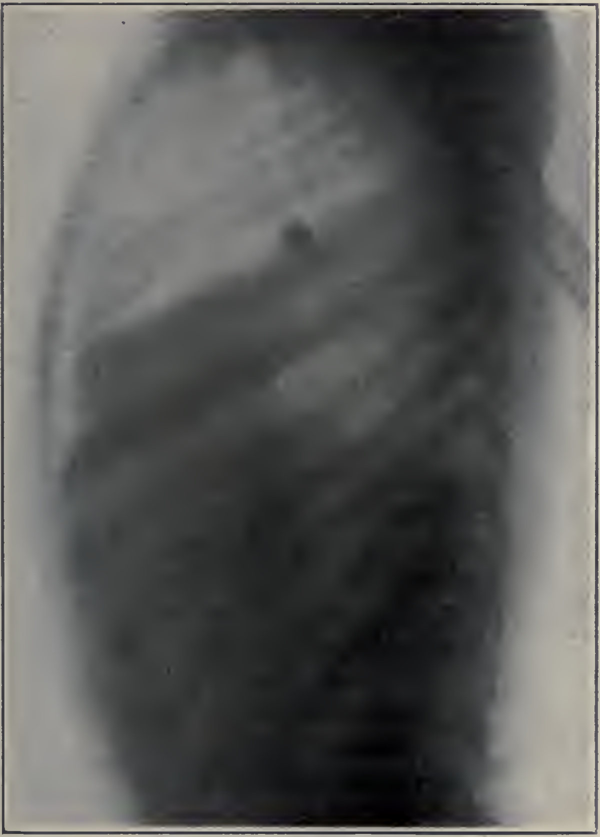

Figure 6. Lateral radiograph (by Dr. George C. Johnston) of a child of 4 years, showing the normal direction of the trachea. A pale streak is seen extending backward as well as downward, ending at the foreign body in the right bronchus. There is a narrowing of this streak at the bifurcation, representing a flattening from before backwards. Compare schema, Figure 5.

lumination that will enable the operator to see through a pool of blood and secretion. How to remove the fluid in the least possible time is the study of all endoscopists and the aspirator in the wall of the esophagoscope is used because there is no interruption of the work. It is a common thing at a gastroscopy to remove a pint of fluid without any interruption. Safety-pin closers continue to be devised. The last one by Hubbard is very ingenious, and doubtless will be useful for purposes other than closing pins. As is well known, wide gagging of the mouth interferes very seriously with endoscopy. All that is necessary is to keep the patient from biting the tubes. For this purpose I have found the bite block devised by Boyce and modified by my assistant McKee of great service. The anesthetizing tube is used for insufflation of anesthesia during esophagoscopy, though it is rarely that I use general anesthesia. If bronchoscopy is used, the anesthetic is insufflated through the bronchoscope. For amputation of the cancerous and the tuberculous epiglottis, I have found most useful a very heavy snare cannula armed with No. 5 steel piano wire and fitted to the massive handles of the Peters tonsil snare. By firm downward pressure on the cannula the loop can be made completely to amputate the involved epiglottis, *en masse* as demonstrated by dissection of the removed tissues. The cannula is passed beside the laryngeal speculum, not through its lumen. Wide gagging, as pointed out by the author many years ago, prevents proper laryngeal exposure and may thus defeat efforts at bronchoscopy by forcing the mandible down on the hyoid bone. All that is needed in the way of a gag is a bite block to prevent the patient closing his jaws on the delicate tube. For this, Dr. Boyce devised the thimble bite block which has recently been modified in shape by Dr. McKee and an ether tube has been added by Dr. McCready. Ether is insufflated when needed for esophagoscopy. In bronchoscopy the insufflation is done through the bronchoscope.

Preparation of the patient: In all instances of obstructive diseases of the esophagus, it is very essential to have the patient regurgitate after taking a copious drink of water in order to make sure that dilatations or diverticula, if present, may be emptied. Diverticula can be emptied sometimes by pressure on the neck, but in any event, the presence of large quantities of food in the esophagus interferes very seriously with esophagoscopy and introduces a great element of danger if a general anesthetic be used. In all cases in which time permits it is very essential, before bronchoscopy, esophagoscopy or gastroscopy, that the patient be prepared as for any operative procedure by a carthartic, rest in bed, and the mouth should always be thoroughly cleansed by numerous brushings of the teeth and rinsing the mouth with 30 per cent alcohol, which is the best non-toxic antiseptic. The author's early insistence upon strictly aseptic operating-room technic in all forms of peroral endoscopy, while much ridiculed at the time, has come to be recognized everywhere as quite essential in a procedure which necessarily frequently comes in contact with tuberculosis, pneumonia, diphtheria, erysipelas, and other infectious diseases. It is a matter of great gratification to the author that in fifty examinations of swabs used for wiping secretions from the bronchi, in no one instance was there found any trace of epithelial cells or of such forms of bacteria as would prove that the instruments had been in any way contaminated by contact with the mouth. This is worthy of note in connection with the obtaining of inoculation ma-

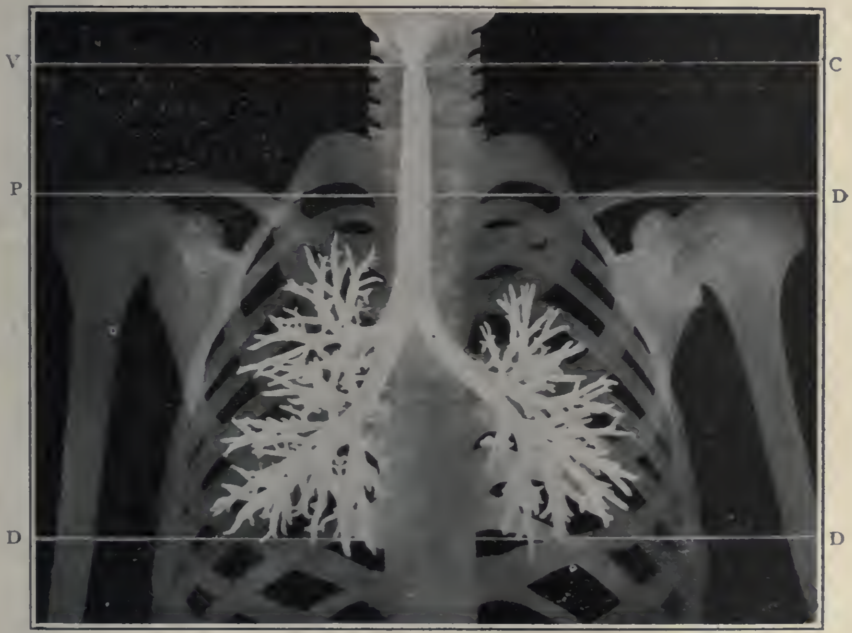

Figure 7. Illustration of a positive film used for overlaying to assist in localization of foreign bodies or lesions in the thorax. The lower white line (D-D) corresponds to the diaphragm, the middle line (P-D) to the dome of the pleura. These lines assist in placing the overlay. The upper line (V-C), corresponding to the vocal cords, is occasionally useful. Twelve photographic enlargements are on hand so that a film of the size (rather than the age) is available for any sized patient. The few monute (rather than the age) is available for any sized patient. The few minute dome.

terial for the production of autogenous vaccines in cases of chronic bronchitis.

Position of the patient: For adults, the sitting position is very satisfactory for diagnosis. For infants and children, the dorsal position is better because of better control of the patient. In foreign body cases, whether adults or children, the patient should always be recumbent, never erect, because in the erect position gravity works against the operator, and the foreign body may reach a deeper point in the air-passages than it would in the recumbent position. This is particularly true of foreign bodies in the larynx and pharynx, which should never be touched unless the patient is in the Trendellenberg position. Quite a large proportion of the foreign bodies in the bronchi that have been sent in to the author, were originally in the larynx or pharynx and fell down when displaced by the attempts of the operator, who first saw the case, to remove the intruder. There seems to be quite prevalent a faulty conception of the position of the patient. The correct position for direct laryngoscopy was demonstrated by Kirstein many years ago. It consists chiefly in an extreme anterior movement of the cervical spine, with extension at the occipito-atlantal joint. In the recumbent position the anterior placing of the cervical spine means raising the head above the level of the table, as demonstrated by Boyce. To allow the head to "hang over the end of the table in the Rose position," as recommended in so many text-books, is to render endoscopy extremely difficult or impossible. Dr. Johnston has demonstrated the usefulness of flexing the head for direct laryngoscopy on the recumbent patient, putting a pillow under the patient's head, the operator standing to the left side of the patient. The Johnston position is particularly advantageous where the operator is without a regularly trained assistant with whom he is in the habit of working, because anyone can hold the head on the pillow. The position is not adapted to bronchoscopy, though Johnston used it to start the tube, and then the head of the patient is brought into the Boyce position. This requires skill and care to prevent any traumatism to the trachea in making the change. The Boyce position requires a trained assistant. and operator and assistant must work together, under which circumstances the Boyce position is ideal for bronchoscopy. I have found the Johnston position exceedingly useful in disease of the cervical spine where the children were fixed in an apparatus which I did not need to disturb to get an excellent view of the larynx. The most important point of all positions in tube work is the extreme anterior position of the cervical spine, and for this the operator should be sitting also, if the patient is in the sitting position as shown in the photograph. The lateral position for bronchoscopy and esophagoscopy has found but little favor in America. Its only real advantage is the facility with which secretions drain from the lowermost corner of the mouth. This can be accomplished almost as well in the dorsal position with a wick of gauze hanging out over from the pharynx, the outer end the longer. If secretions are too thick to drain by capillarity, the gauze is frequently replaced by a fresh piece. An aspirating drainage tube of metal connected with the author's esophagoscopic aspirator is hooked into the lowermost portion of the patient's mouth in bronchoscopy. This rids the mouth of secretions while the patient is in the dorsal position.

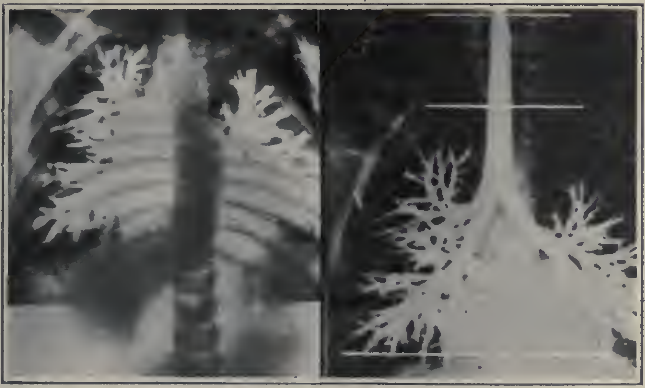

Figure 8. Illustrating a positive radiograph of the tracheo-bronchial used as a film for overlaying to assist in localization of a foreign body. The left hand illustration shows the film laid over a negative of a patient in whose left main bronchus there was a pin. Localization verified by bronchoscopy. The shadow of the pin is strengthened with ink.

Anesthesia: Davis reports the use of the intra-muscular injection of ether into the buttock of a child primarily rendered unconscious by ethylchlorid. Intra-tracheal insufflation anesthesia calls for direct laryngoscopy for the insertion of the anesthetizing tube into the trachea, especially to eliminate the possibility of laryngeal disease, as insisted upon by Elsberg. Insufflation anesthesia is used by Henry Janeway for gastroscopy, and he has done remarkable work in the insufflation of nitrous oxid and oxygen for this purpose, thereby doing away with one objection that has been raised to gastroscopy, namely, ether anesthesia. He has made some gastroscopic examinations without any anesthetic. The greatest of recent progress in anesthesia for peroral endoscopy is toward the use of no anesthetic at all. In general anesthesia the total abolition of the cough-reflex should only be for short periods. The facile operator will do good work in many cases in spite of moderate degree of cough, and the cough can be advantageously used to rid the air-passages of secretion as elsewhere herein explained. After a short period of tubal contact in bronchoscopy, coughing lessens and often practically ceases, especially in infants without any anesthetic having been used.

In general surgery, anesthesia is required for three purposes: (1) The obtunding of pain, (really analgesia); (2) the abolition of reflexes, (relaxation); (3) for psychic effect, (mainly abolition of apprehension). For peroral endoscopy, analgesia is not required, for the pain in careful work is exceedingly slight. Anesthesia for the lessening of the reflexes is only occasionally necessary. Apprehension can be abolished or greatly diminished by the control of the patient's mental state through the personality of the operator. The degree of this control varies widely with the personal equation of the operator as well as of the patient. The operator who will make a special study of it can keep his patient free from apprehension. He will keep his patient's mind fixed on the task of breathing slowly, deeply and regularly and will get along without any anesthetic and do better work than another operator with a general anesthetic. I quite agree with Bruenings that the use of general anesthesia to overcome faults in technic is unjustifiable. The author begs to submit his personal views on anesthesia as a basis for discussion. *In children* under 6 years of age no anesthetic, general or local, should be used for direct laryngoscopy, peroral bronchoscopy or esophagoscopy except that general anesthesia may be advisable in case of very sharp foreign bodies as safety-pins or fish-hooks threatening perforation from coughing or vomiting. Even in such cases general anesthesia is absolutely contra-indicated if there is the slightest dyspnea. Cocain is needless and dangerous in children. *For adults* no anesthesia, general or local is necessary for esophagoscopy for diagnosis, or for foreign bodies, save in case of very large and sharp foreign bodies to relax the esophageal and accessory musculatures, thereby lessening the liability to local trauma from the extraction of very large foreign bodies that are sharp or rough through a spasmodically constricted lumen. The use of a general anesthetic in cases of foreign bodies in the esophagus enormously increases the danger of respiratory arrest as soon as manipulation of the foreign body is commenced. Therefore, chloroform should never be used, though it may be added if necessary for relaxation after the stimulant effects of ether insure safety. Local anesthesia of the esophagus is needless. The esophagus is quite insensitive as anyone can demonstrate upon himself by swallowing very hot tea. After the cricoid level is passed there is no sensation. Therefore, local anesthesia, if used at all, should be limited to the laryngo-pharynx, but in most cases even this is quite unnecessary, and most patients can distinguish little difference in discomfort. For direct laryngoscopy for diagnosis, anesthesia of the larynx, including the epiglottis, is needed. It is better not to apply cocain below this point until a primary inspection has been made, because of the altered appearances due to ischemia. For foreign bodies in adults, cocain should not be applied with any form of applicator. A spray is much less likely to dislodge the intruder and often none at all is needed. For diagnosis and the removal of specimens or neoplasms, local anesthesia is often required. For the removal of small angiomata and edematous growths of the larynx general anesthesia may be necessary because these tumors shrink and may disappear under local anesthesia so as to render accurate work impossible. For bronchoscopy, if tracheotomy is done, whether in adults or children, it should be under local infiltration anesthesia, never, under any circumstances whatever, under general anesthesia. In the last 107 bronchoscopies and esophagoscopies for foreign bodies in children under 6 years of age, done in my clinic, no anesthetic general or local, has been used. Ten of these cases have

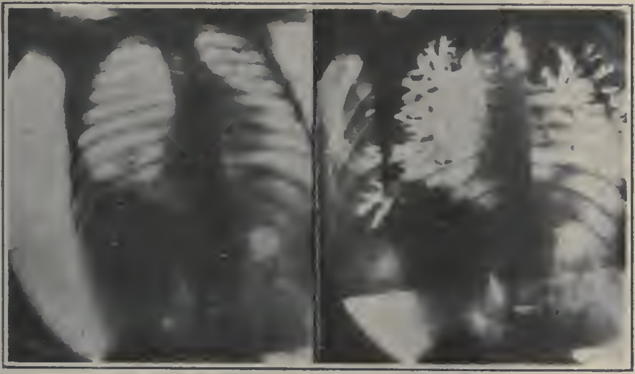

Figure 9. Illustrating on the right lung abscess (retouched). On the left the abscess is localized in the right inferior lobe bronchus by the method of overlaying. The localization coincided with the endoscopic findings when the abscess was evacuated bronchoscopically.

been in the children of physicians, every one of whom expressed his delight that no anesthetic was used, and in each instance the doctor was present at the removal of the foreign body from his own child. There is no question in the author's mind but that all forms of anesthesia, general or local, introduce a great element of danger to the handling of foreign-body cases in children, more especially when chloroform is used. In adults, with ether, the risk is probably very slight. The ordinary risks of chloroform anesthesia are enormously increased in esophagoscopy, for which chloroform is absolutely contra-indicated. Intra-tracheal insufflation anesthesia with the Elsberg apparatus is ideal for esophagoscopy.

Technic: Many interesting points in regard to technic were brought out by replies to my circular letter of inquiries. Space forbids taking these up, but one point is worthy of mention. I was very much astonished to find some men were still using a mandrin to pass an esophagoscope, and one endoscopist uses a mandrin even for passing a bronchoscope. In esophagoscopy, the tubes should always be passed by sight, lest a foreign body be overridden, or a diseased wall encountered. In bronchoscopy a mandrin is a needless encumbrance, and I believe has altogether been abandoned by bronchoscopists of large experience everywhere.

Direct laryngoscopy: Considering the fact that it is now eighteen years since Kirstein demonstrated the feasibility of examining the larynx by direct methods, and considering the developments of Killian who made it possible, and of Bruenings, Von Eicken and others, and taking into consideration also the fact that the larynx of any child can be examined in a few seconds without any anesthesia, either general or local, it is a very remarkable thing that there remains in the world any laryngologist who is to-day not availing himself of this method, but is depending upon an inferential diagnosis from the appearance of the epiglottis, for it is but seldom that we can see more than this by the indirect method in younger children. There has been a tendency, in the last few years, to question the value of direct laryngeal methods for diagnosis in adults. While it is undoubtedly true that the indirect method is of the greatest value and always will be, it is also true that in many instances diagnosis of laryngeal infiltrations is frequently cleared up by the different viewpoint obtained in direct laryngoscopy. Bruenings states that the early hopes of direct laryngeal operating have not been entirely fulfilled. This is true only so far as it relates to the hopes of those who did not fully understand the work, and who supposed that because the operative procedures were direct, that it would be easy without special training for the operator already facile in ordinary faucial and pharyngeal work. Of course, it is true that until a man has worked a long time, he experiences the difficulty of which Bruenings speaks, and which I presume he has observed in pupils, namely, that the "delicacy and fineness of movement of the right hand is considerably interfered with by the left hand being exerted simultaneously." Yet on precisely the same basis it might be argued that the pianoforte is a failure, because the accuracy of execution in the treble is interfered with because "one hand only and that the left one" has to pound out those rich, full, deep, wide interval chords that are the great charm of the pianoforte. The difference is that the pianist expects to prac-

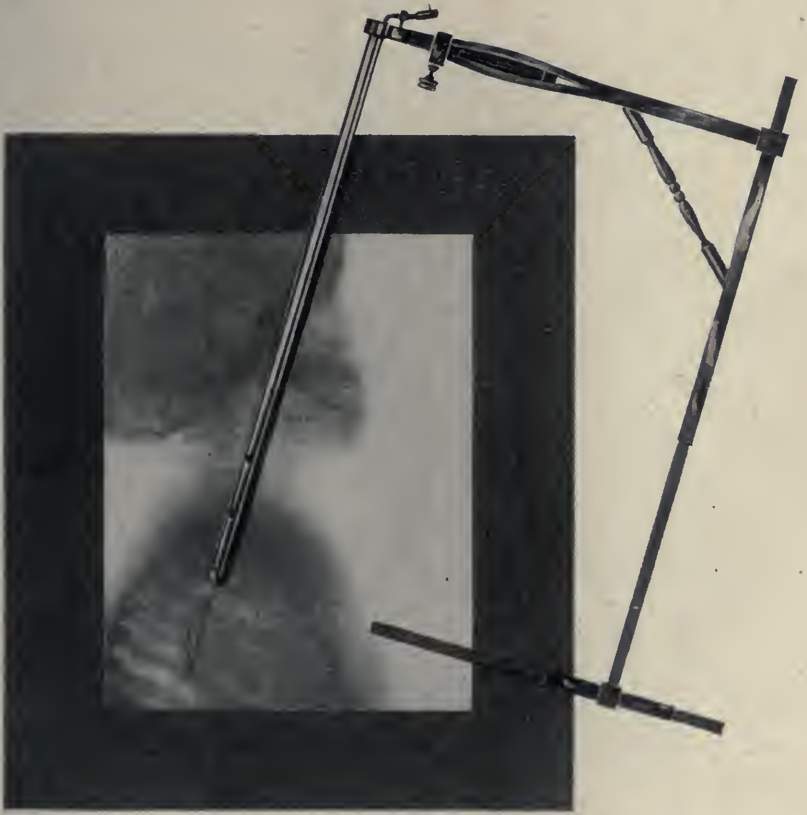

Figure 10. Illustrating the position of the caliper-guide in getting the adjustments by which the point of the bronchoscope can be brought, later at bronchoscopy, in close proximity to a foreign body. For use in case of small foreign bodies in minute bronchi. Suggested by Dr. John W. Boyce.

tice for years to acquire skill, whereas many laryngologists think that long years of laryngology should enable them to do skillful endoscopic work with little practice. If the pupil is taught to practice constantly the introduction of the laryngeal speculum with the left hand only, and using his right hand only to move the patient's upper lip out of the way of injury (with the index-finger), he will soon acquire perfect mastery of prolonged left-handed exposure and co-ordinate movement of the two hands in direct operating. I believe this has been too little insisted upon, though it is one of the most important conditions for the advancement of the usefulness of direct endoscopic operating. Greater skill can be acquired and all work expedited if all handling of tubes and specula be done with the left hand only, leaving the right hand free at all times for the manipulations of forceps and other instruments. Trained in this way, I believe the pupil will not be disappointed, especially if he has a trained assistant to place the patient's head and neck in the proper position, and to make counter-pressure with the index-finger upon the thyroid cartilage externally. This counter-pressure lessens, to a very great degree, the amount of pressure exerted with the left hand upon the tip of the speculum, with subsequent less exertion with the operator's left hand, and, of course, less discomfort to the patient. Papilloma in adults is always curable by repeated removals by direct laryngoscopy with interim applications of alcohol. Eventually there results a thickening and hardening of the laryngeal mucosa, which makes a bad soil for the growth of papillomata. The author has never yet failed to cure a case in adults in this manner; but the treatment has extended over a number of years in some instances. Papillomata in children in many instances will yield to the same treatment. In a few, however, it is necessary to do laryngostomy, with Roentgen-ray applications to the open larynx. The author is utterly at a loss to understand why writers on this subject persist in advising general anesthesia for the removal of papillomata in children. A general anesthetic is absolutely contra-indicated in every disease of the larynx in children. It is, moreover, absolutely unnecessary. Cocain is very toxic for children and should never be used, and it also is quite unnecessary. Skillful, direct removal is almost painless in children, and after a number of sittings children usually do not even cry, though infants usually do. The work of Harmon Smith on fulguration for the treatment of papillomata in children by endoscopic methods has yielded excellent results, and marks a distinct advance in the treatment of these stubborn cases. Abundance of evidence has been forthcoming proving the great usefulness of the galvano-cautery in the treatment of tuberculous infiltrations in the larynx, and all of the laryngologists that have used the direct methods for these applications are enthusiastic as to the precision with which the caustic point can be applied. The direct method exposes to view the anterior surface of the posterior wall of the arytenoid masses, and thus the point can be applied practically perpendicularly to the surface, which is in great contrast to the indirect method by which a more or less lateral application of the point renders accurate puncture more difficult, and sometimes impossible. Furthermore, it matters little how intolerant the patient may be to the laryngoscopic mirror; he cannot in any case whatsoever prevent the skillful operator from making an accurate application. Direct laryngoscopy has opened up a new field in the local treatment of tuberculous lesions. The usefulness of endoscopy in malignant disease of the larynx ends with the inspection of both sides of the

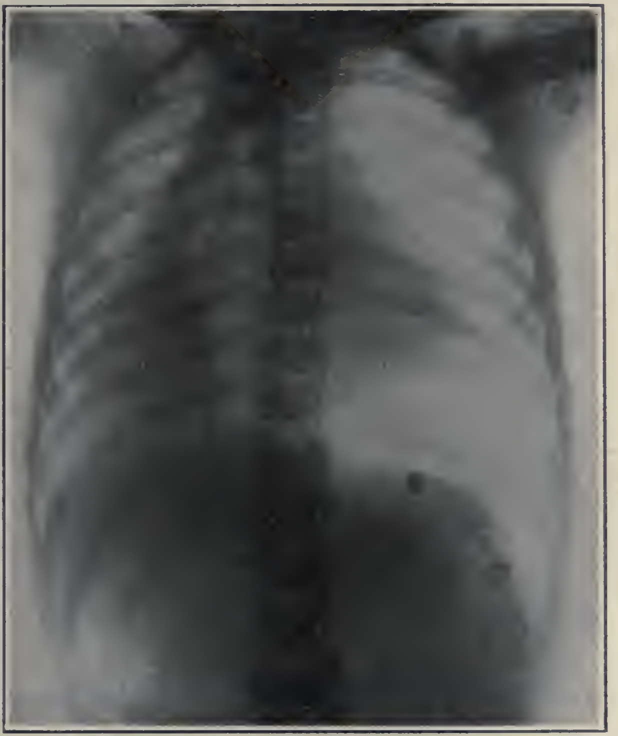

Figure 11. Radiograph by Dr. George C. Johnston, showing foreign body (primer) at the bottom of the pleural cavity of a child of 4 years. Foreign body removed by pleuroscopy.

party wall and the taking of a specimen. Following the initiative of Sir Felix Semon and Mr. Butlin, my series of cures of malignant diseases of the larynx from the operation of thyrotomy in intrinsic disease of small extent, has been such a gratification to me that I feel that it would be a step backward to attempt endo-laryngeal removal, and I have seen nothing in the recent progress of endoscopy to lead me to modify my views. The precision with which a specimen can be taken by the endoscopic method, so as to include a little of the bordering normal tissue, gives a character of certainty and reliability to the preliminary examination of the specimen that seldom pertains to the little fragments so often obtained by the indirect method. Plastic operations on the cicatricial adventitious vocal bands have yielded the author excellent results in cicatricial larynges following laryngostomy, the chondritis of typhoid fever, lues, tuberculosis, and also in one case of malignancy, which, after thyrotomy, had an anterior cicatricial web preventing approximation, as reported in a recent article by the author.

Bronchoscopy: The closure and removal of open safety pins in the esophagus has now become a relatively common procedure with the endoscopist, but the closure and removal of an open safety pin from the trachea by oral bronchscopy has been recently very skillfully done by Hudson-Makuen. Space forbids mention of many mechanical problems of removal successfully coped with. A number of them go to prove that, however difficult the problem, the temptation to remove a foreign body by main strength must be resisted. Instead, careful thought will evolve a plan, by a new device or by a modification of the old, or by version of the foreign body—in short, some means by which the high percentage of mortality sure to attend forcible extraction may be obviated. Benign tumors within the lumen of the trachea, seem to be quite rare, though possibly when bronchoscopy for diagnosis comes to be more frequently resorted to, they will be more common. Emil Mayer reports the very interesting case of a child with a peculiar crowing respiration and physical signs of absolute obstruction of the lower portion of the right lung; ray-examination negative. At bronchoscopy, a papilloma was found filling the lower portion of a bronchial tube, and its endoscopic removal was followed by a cure. The endo-bronchial treatment for asthma and for other diseases, advocated by Ephrain and others, and used by Emil Mayer, Ingals, Yankauer, Horn, Freudenthal, and others in America, is becoming everywhere a recognized method of treatment in obstinate cases. As Ingals has stated, it is not to be advocated for general use by everyone without previous endoscopic training. As Von Eicken has pointed out, it is unnecessary to introduce the bronchoscope in order to medicate the bronchi locally. Dr. Emma E. Musson introduces a soft tube through the glottis by means of the laryngeal speculum, and has demonstrated that after the examination of local conditions is made bronchoscopically, an occasional bronchoscopy during the course of medication will suffice.

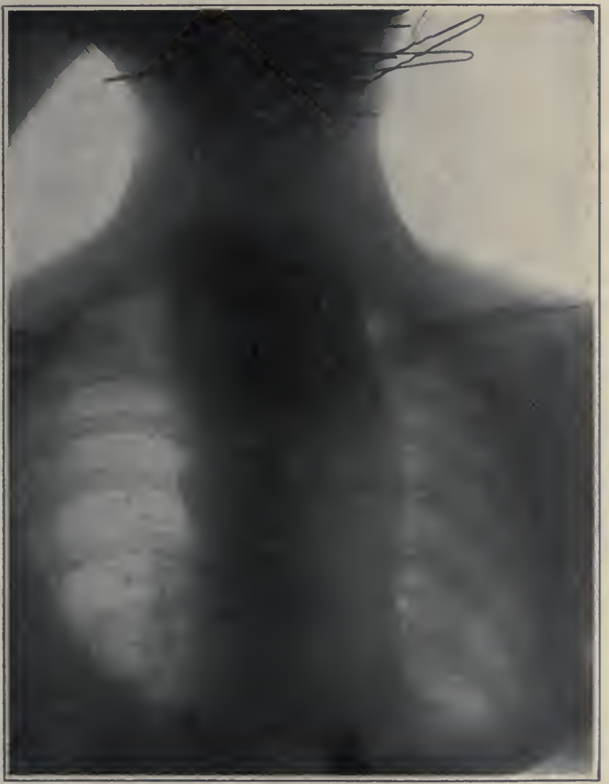

Figure 12. Radiograph of woman of 22 years simulating diverticulum. The bismuth porridge rests upon about 1½ liters of stale food in an enormous dilatation as demonstrated esophagoscopically after emptying. A case of abdominal esophagismus.

Indications for bronchoscopy: The following indications for bronchoscopy are offered for discussion that they may be added to, or subtracted from, as the consensus of opinion may indicate. In most instances an esophagoscopy is also indicated, especially in cases of suspected thoracic disease:

1. The appearance, in the radiograph, of a foreign body or of any suspicious shadow.

2. In any case in which there is a clear history of the patient having choked on a foreign body, and in which the foreign body was not afterward found. In this connection, it must be borne in mind that foreign bodies may be multiple, as in one case of my own in which a bronchoscopy was not done because after the accident a gourd seed was found in the stools. Three months later I removed a gourd seed from the bronchus. The child had been playing with a whole mouthful of gourd seeds.

3. In any case in which there are signs of stenosis of the trachea or of a bronchus.

4. In the absence of any foreign-body history, the patient giving symptoms of pulmonary tuberculosis, in which the bacilli cannot be found in the sputum and especially if the physical signs are at the base, particularly the right base, and above all, if there are physical signs of pleural effusion. A number of instances have been recorded (Ingals and others) in which prolonged sojourn of a foreign body in the lung had produced symptoms for which the patient was repeatedly tapped for a suspected pleural effusion without getting fluid. I have myself observed two such cases, one in which the foreign body was present seven years, and the other in which it was present ten years. Those patients had been treated for tuberculosis, and both had been tapped.

5. All cases of bronchiectasis should be bronchoscoped for foreign bodies, and also for local treatment. Emil Mayer found a foreign body in one case of bronchiectasis where its presence had never been suspected. I, myself, have found bronchiectasis present in two cases of prolonged sojourn of a foreign body in the right inferior lobe bronchus, though in both of my cases the foreign body had been discovered radiographically.

6. Every case of dyspnea, except, of course, pneumonia and similar well understood conditions, calls for bronchoscopy.

7. Every case in which tracheotomy does not relieve the dyspnea should be bronchoscoped to determine why the tracheal cannula does not give relief. All cases of hemoptysis which are not definitely proved to be tuberculous should be bronchoscoped for diagnosis, and any severe bleeding should be endoscopically packed as advised by Killian. I have examined a great many cases of hemoptysis to determine the cause of bleeding from the lungs. All of these cases had been, at some time or other; diagnosticated as

tuberculosis, and many of them proved to be tuberculosis, but among the non-tubercular ones, there were three cases of aneurysm, two of cancer, three of lues. In quite a number of cases, it has been possible to make a diagnosis of tuberculosis from lesions found and specimens removed in cases where the physical signs had been negative, or at least negative opinions had been given by competent physical diagnosticians.

9. Every case of paralysis of the recurrent nerve the cause of which is not positively known.

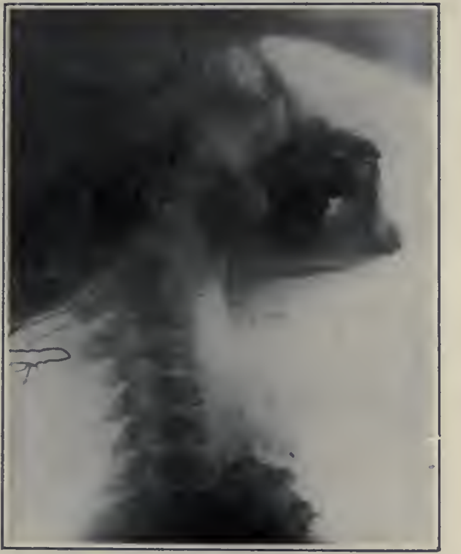

Figure 13. Lateral radiograph (by Dr. Lange) of same patient as in Figure 9, the shadow of the bismuth mixture simulating diverticulum. This mass protruded in the neck and could be evacuated by external pressure with the patient's hand.

10. In any case of thoracic disease in which any element of doubt exists, valuable information may be gained by bronchoscopy.

11. In case of doubt as to whether bronchoscopy should be done or not, bronchoscopy should always be done.

Subglottic edema: The cause of subglottic edema is worthy of our most careful consideration. In the author's opinion, it makes a very great difference what instrument is used and how it is handled. We all know that the O'Dwyer intubation tube may stay in six or seven days without being followed by subglottic edema, except in rare instances. The O'Dwyer tube is short so that no leverage is exerted, and it is never larger than will comfortably fit the lumen of the subglottic larynx. To my mind that is the keynote to the situation. Large-sized tubes roughly manipulated, and what is more important manipulated without a trained assistant whose business it is to keep the head in such a position that the trachea will at all times be in line with the axis of the tube so that the laryngeal tissues do not become the fulcrum upon which the bronchoscope may bear and press. Judging by the printed reports, it is customary with most operators to use a far larger diameter of tubes than is good for the infant larynx. Since 1911, by closely observing these points, not one case of subglottic edema has occurred in the practice of either Dr. Ellen J. Patterson or myself in thirty successful removals of foreign bodies in the trachea and bronchi of infants under one year, the youngest 2½ months. Every case was done by oral bronchoscopy. In a number of instances, the child has become dyspneic within twenty-four or thirty-six hours after the bronchoscopy, but on passing the bronchoscope, a large quantity of secretion was removed with complete re-establishment of quiet respiration and the disappearance of the dyspnea. In other words, the child was drowning in its own secretions, because children expectorate with difficulty. This was especially noticeable in cases where the foreign body had been some time in the air passages, or where it was of an irritating nature like a peanut kernel. We have had altogether five cases of peanut kernels in the bronchi and in all there was present a severe bronchitis with abundant secretion. From these observations, and from the written report of cases where tracheotomy has been done for supposed post-bronchoscopic subglottic edema, the author feels sure that in a portion of these cases complete relief would have followed the peroral bronchoscopic removal of secretions, and he would especially urge that all cases of post-bronchoscopic dyspnea require not only a direct laryngoscopy for diagnosis, but a bronchoscopy for the removal of secretions which infants cannot expectorate. Tracheotomy, except in extreme cases, should not be done until after this, save when needed in following the cardinal rule of tracheo-laryngeal surgery that "in a dyspneic patient, tracheotomy should always be done early, never late." Unfortunately, the statement crept into the early literature that the child's larynx is more easily stretched than that of the adult, and this has led to the use of tubes entirely too large. In the author's clinic, both Dr. Patterson and myself use tubes of 4 mm, and 5 mm, internal diameter, for children under 6 years of age, the 4 mm. tube being for infants under one year. Our youngest patient from whom a foreign body was removed was an infant of 2½ months.

This was a common pin removed from the right bronchus with a tube 4 mm. internal diameter. Faulty direction of the tube on introducing may easily cause trauma by gouging into the subglottic wall, if the axis of the bronchoscope and that of the trachea do not coincide at the moment the tube passes the glottis. In ten different publications within the last two years, the operators stated that they placed the patient in the Rose position. If the patient actually was in the Rose position, he was just exactly rightly placed for the bronchoscope to gouge into the subglottic wall and to risk a production of subglottic edema, especially if the head of the patient were a little more to one side than the other. Heavy hands and heavy handles, it must be conceded, are more likely to cause injury to the subglottic tissues than right tubes delicately manipulated. There-

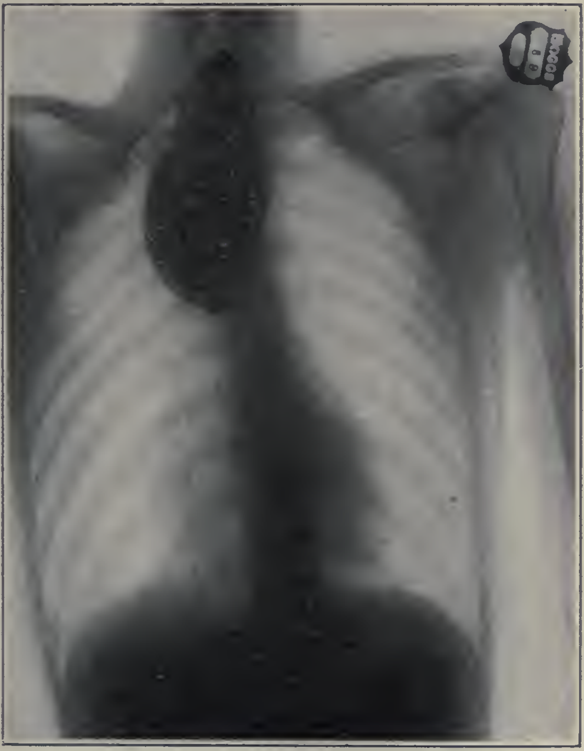

Figure 14. Radiograph (by Dr. Russell H. Boggs) of a woman of 38 years. The shadow, which so much resembles a diverticulum, was esophagoscopically proved to be a dilatation above a luetic stricture. The stricture is behind and above the bottom of the lower border of the shadow of the dilatation. Endoscopic dilatation resulted in a cure.

fore, I think that heavy introducing instruments should be removed, leaving only the light delicate bronchoscopic tube for endo-bronchoscopic work.

Peroral or tracheotomic bronchoscopy. Which? Unfortunately, the statement has crept into the literature that in infants or small children it is preferable to do a tracheotomic bronchoscopy. In the opinion of the author this is due to two things: namely, the ignoring of the precautions mentioned under subglottic edema, and also the fact that when this statement was originally made, illumination was not in the relatively perfect condition that is seen on the instruments of to-day. In making this statement, the author hopes he will not be misunderstood as referring to any difference between distal and proximal illumination. He means simply that the light on all forms of instruments to-day is far superior to what it was in the early days. At that time it made a great difference whether the tube was a long one or a short one. To-day, I doubt very much whether any one can tell by looking through the lumen whether the tube is 30 cm. or 50 cm. The author has often tested this and found the observer unable to tell with a pair of concealed tubes which was the longer and which was the shorter, even though one was an 80 cm. gastroscope. Therefore, a short tube is no advantage so far as illumination is concerned. In regard to the manipulation of forceps, etc., an additional length of 10 or 14 cm. is of no advantage whatever. It is true that a somewhat larger tube can be used through a tracheotomic wound than through the glottis with safety to the subglottic structure, but Dr. Patterson and I have found that a tube of 4mm. internal diameter is amply large for delicate manipulations under the guidance of the eye such as the placing of a hook through the eye of a shoe button in the bronchus of a child 6 months of age. If one is not accustomed to work through small tubes, doubtless it is better to do a tracheotomic bronchoscopy than to force a large tube through the larynx. In upper lobe bronchoscopy, almost as favorable an angle can be obtained by shifting the tube to the opposite corner of the mouth, as could be obtained by a tracheotomic bronchoscopy, provided the assistant, holding the head, and the operator have worked years together so that they co-operate and the head of the patient is carried along with the tube to the extreme opposite position from the lobe to be explored. All of these things are readily demonstrated on the patient, but unfortunately the statements in the early literature have led men into hasty tracheotomy rather than to develop the necessary technic to work with exceedingly small tubes and to avoid damage to the subglottic area. Out of 706 bronchoscopies for all purposes, no one in the author's clinic has ever done a tracheotomy for the purpose of bronchoscopy. The only lower bronchoscopy ever done by me for a foreign body was in a case where the general surgeon had already done a tracheotomy for the compressive stenosis due to a goiter. In

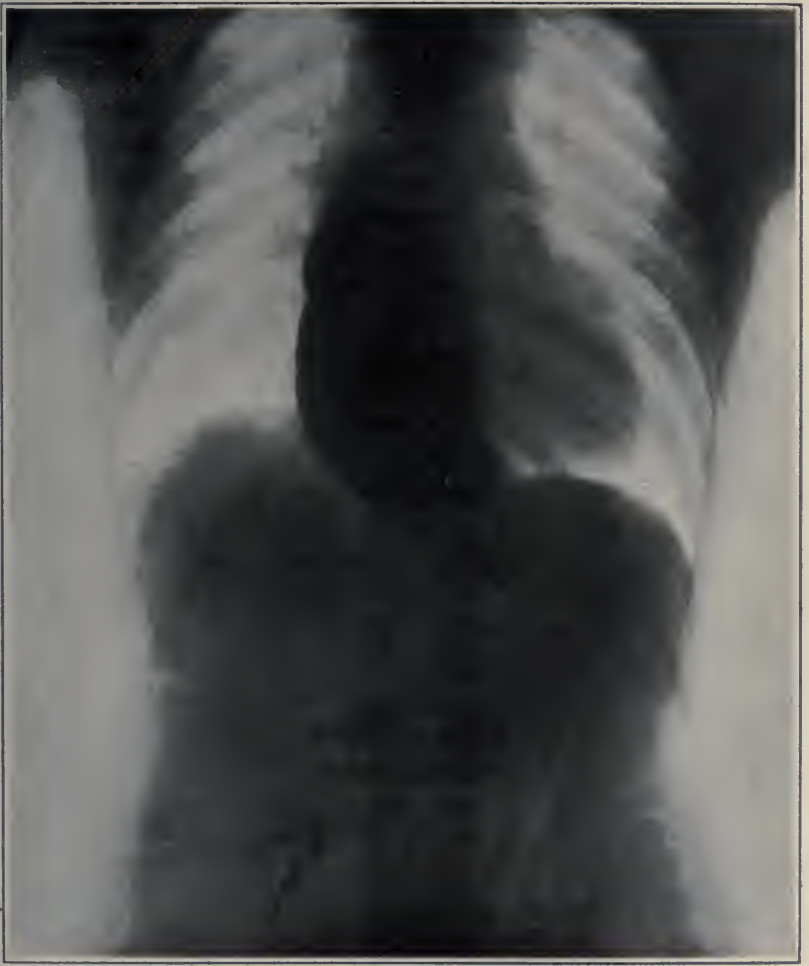

Figure 15. Radiograph (by Dr. George C. Johnston) of a woman of 45 years, showing an abdominal esophagismus which was afterward cured by endoscopic mechanical divulsion. The "flat floor" of the dilatation shows why previously used blind methods had failed to introduce any instrument through the hiatus. The possibility of the radiograph being taken just before normal physiologic opening of the cardia in the deglutitory cycle was eliminated by the elapsed time.

that case I failed to find the foreign body, a small pin. With that exception, it has always been our custom to insert the bronchoscope through the mouth, even in the cases already tracheotomized for dyspnea. Very often patients come in with such severe dyspnea that it is unwise to leave them over night without a tracheotomy. In such cases, the absolute rule in tracheal surgery to do a tracheotomy always early, never late, is followed; but in the first management of the case we have always found that a bronchoscope introduced through the mouth is much better for the temporary relief of dyspnea, insufflation of oxygen, etc.; and in foreign-body cases the bronchoscope introduced through the mouth is much more freely manipulated and much more satisfactory to work with because the patient's head is very much less in the way, and all of the movements and manipulations are the usual ones in peroral endoscopy.

Pleuroscopy: The author has, in one instance, removed a foreign body, a primer from a shotgun cartridge, from the pleural cavity through a small opening made in the chest by Dr. J. Hartley Anderson. This was done immediately after the accident and there was no odor or pus at any time. General anesthesia was given, and the child, after the chest opening was made, was placed in the sitting position in order that the foreign body would fall to the diaphragm. Healing was prompt and the air began to enter the lung on the fifth day. The child made a prompt recovery, and now, about a year after the operation, is in perfect health. In this class of cases, pleuroscopy promises excellent results if done immediately, before infection or inflammation has set in. Only a small opening is necessary, and this does not involve anything like the shock consequent upon the large osteoplastic flap. The only shock is the pleural shock, which is slight, and which in my case was present anyway because there was already a pneumothorax before the chest was opened. In a future case, I would aspirate the air after closure of the wound.

Mortality and results of bronchoscopy for foreign bodies: In considering the mortality of bronchoscopy, two facts stand out prominently. The first is that we should distinguish between the mortality of the method on the one hand, and the mortality from the lack of promptness and precision in performing it. For instance, the reports of four of the fatal cases show that the patients died upon the table of asphyxia for want of a prompt bronchoscopy. The reports received show very clearly that the mortality was in the main in inverse ratio to the skill and especially to the experience of the operator. The best work with the lowest mortality has been done by those who have sufficient endoscopic work to keep not only themselves but their assistants, nurses, in fact their entire organization in constant training. In 171 cases of foreign body in the trachea and bronchi, bronchoscoped during the last two years by various operators, there were nine deaths (5.3 per cent). This

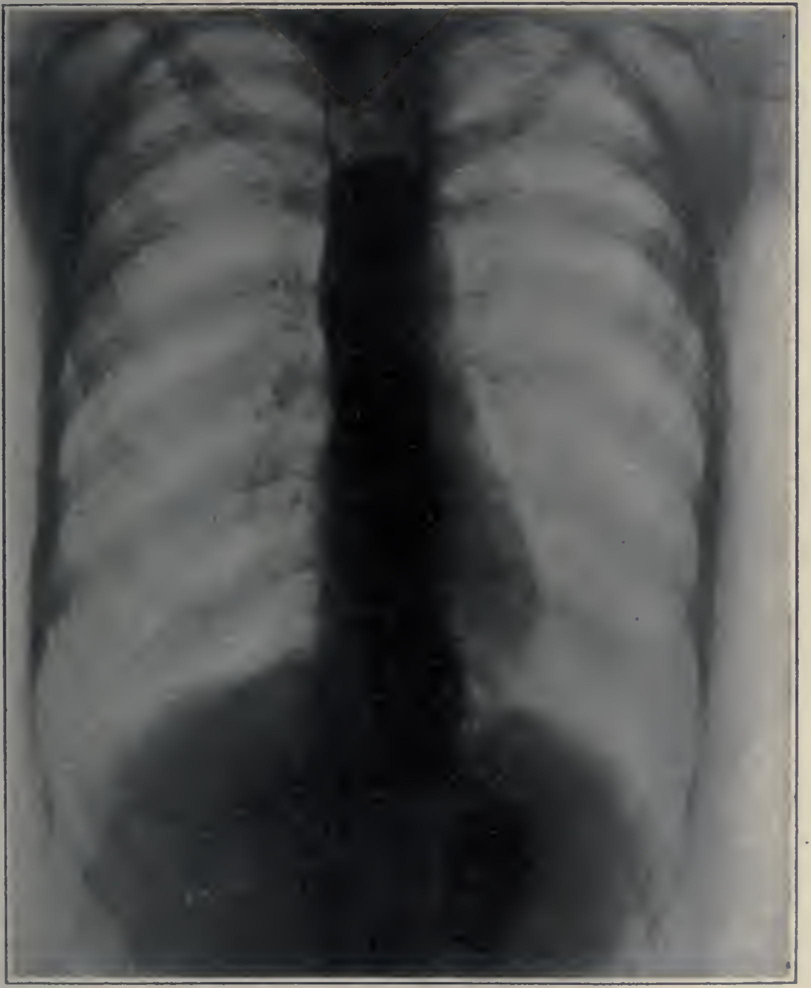

Figure 16. Radiograph (by Dr. J. C. Bowen) of a woman of 28 years showing an abdominal esophagismus with only very slight dilatation above it. The deviation of the esophagus by the aorta was verified esophagoscopically.

does not include four deaths due to asphyxia for want of promptness in performing bronchoscopy. Of these 156 were removed, 140 by peroral bronchoscopy, twenty-two by tracheotomic bronchoscopy. Of the fifteen unsuccessful cases, twelve were failures to find the foreign body known to be present, and only three were failures to remove it when found. In the twelve cases mentioned as failures to find the foreign body are included four in which the foreign body had been seen when higher up, but after escaping into the deeper, minute bronchi it could not be relocated bronchoscopically, though still showing in the radiograph. The statistics of the author's own clinic and of his cases elsewhere, which are not included in the foregoing are as follows: Of the last 182 consecutive cases of bronchoscopy for foreign body there was a total of three deaths (1.7 per cent) from any cause whatever within one month, though not all of the cases could be followed this long. Of the 182 cases, all were peroral bronchoscopies. The only tracheotomic bronchoscopy for a foreign body ever done by the author was previously reported. It was unsuccessful as to removal. It failed to convince me of any advantage in the lower route, and the disadvantages are many. Of the 182 cases, the foreign body was removed in 177. Of the five failures to remove foreign bodies known to be present, all were failures to find a small foreign body that was in a small branch bronchus close to the periphery of the lung. Two of these cases were recent. The percentage of my failures will doubtless increase in the future, since I now get the cases upon which others have been unsuccessful and doubtless I shall be equally so; though I have hopes that the elsewhere mentioned recently perfected means of locating small bodies in small bronchi near the periphery will diminish for every one the number of cases in which the intruder cannot be found.

Mortality and results of esophagoscopy for foreign bodies: Of 193 cases of esophagoscopy for foreign body by various operators, the intruder was removed in 155. Of the thirty-eight not removed twenty-six went down. There were twelve deaths (7.8 per cent). It is interesting to note that of the twelve deaths from esophagoscopy for foreign bodies, eight were for bodies in the upper third, four of the patients dying during operation, and in all four the foreign body was not removed until after death. All had been given chloroform, though this was probably only indirectly the cause of death. In seven of the eight, the esophagoscopy was done by operators whose total number of cases was less than three. In the large clinics (from previously published statistics) out of 210 cases of foreign bodies in this location, all were removed but twelve, and these went down. The mortality in the large clinics was 3 per cent. It is also interesting to note that in the present series of cases there were two deaths from laceration of the esophagus from violent removal of large foreign bodies, an artificial denture in one case, a large and rough bone in the other. In both instances the operators stated, in effect, that they believed they could have succeeded in devising methods of safe removal, had they realized the danger of esophageal trauma. Of the 206 cases of esophagoscopy for foreign bodies in the hospitals of Pittsburg and in the author's work in other cities the foreign body was removed in 198, and escaped downward in eight. There were four deaths, one in a woman of

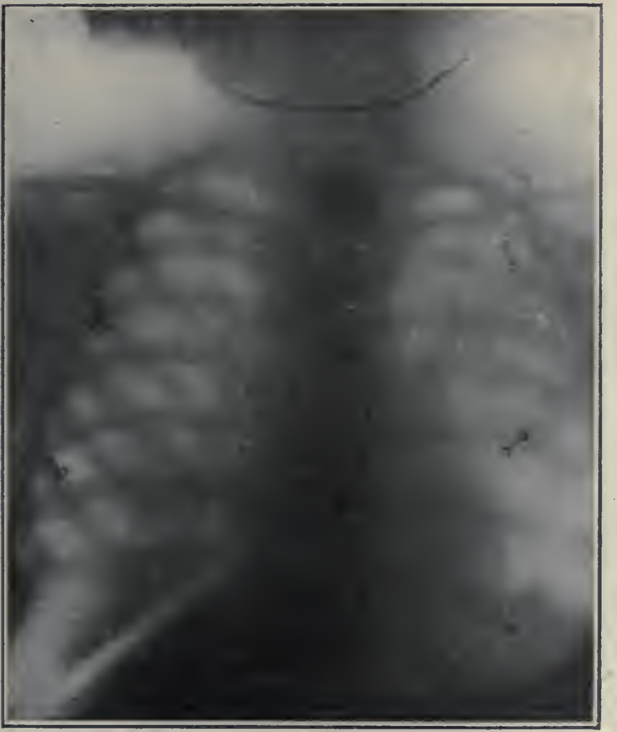

Figure 17. Radiograph (by Dr. George J. Boyd) of a coin in the esophagus, showing the diagonal respiratory esophageal movement, illustrating the necessity of the exact median position of the head if any diagnostic importance is to be attached to asymmetrical respiratory esophageal movement in esophagoscopy for suspected peri-esophageal lesions. This illustrates one of the disadvantages of the lateral position for esophagoscopy.

56 with advanced nephritis; the other three deaths were in patients admitted with severe lacerations of the esophagus, from previous attempts at esophagoscopy. Four other cases seen *in extremis* are not included because owing to profound shock no esophagoscopy was done. There is not, and there never will be, an absolutely safe esophagoscope that can be used otherwise than with care and caution, for even the soft stomach tube has caused perforation and death. But all endoscopists are now agreed that skillfully done under the guidance of the eye, esophagoscopy is practically without mortality, if considered apart from the trauma incident to foreign bodies and their extraction.

With the relatively high mortality from external esophagotomy, it certainly seems as though the operation is rarely if ever justifiable in foreign body cases. The author's personal experience is that with the full relaxation of general anesthesia with ether, (perhaps adding a little chloroform, if necessary, after the patient is under the stimulant effect of the ether) that any foreign body that has gone down the esophagus can be brought up the same way. The full relaxation prevents clamping of the foreign body by the esophageal musculature. But in many instances, in fact, perhaps in nearly all, mechanical ingenuity will devise a way to get the foreign body out, either by turning or morcellation, as in the historic case of Killian where a vulcanite tooth-plate was divided. Ingenuity will succeed where he who relies upon main strength and powerful forceps will meet disaster.

Contra-indications to esophagoscopy: Water hunger is the most serious of all contra-indications to esophagoscopy. Patients have frequently been sent into the author that have been able to get but little liquid down for a number of days, and it is the author's custom always to have a surgeon in readiness on arrival of the patient to have a gastrostomy done immediately, should the patient prove to be in a serious state of water hunger. In the absence of this precaution, it would be wise to have fluid introduced in the circulation by hypodermoclysis and enteroclysis simultaneously. In foreign-body cases there is no absolute contra-indication. If there is anything to be gained by it, a careful esophagoscopy may be undertaken by the trained hand and eye which will stop the procedure when an abnormal tissue which must not be passed or even touched is encountered.

"Cardio-spasm," phreno-spasm and abdominal esophagismus: Undoubtedly the old word "cardio-spasm," like many of the old words of medicine, covers a number of different conditions of inde-

pendent etiology and pathology, and it behooves us as endoscopists carefully to study the different endoscopic pictures throughout the entire esophagus, and as much of the stomach as possible, that we may bring order out of chaos. Much progress has recently been made. The diagnosis of esophagismus is easy in the typical case with an enormous dilatation, a white, pasty, macerated mucosa, and a contracted abdominal esophagus which, however, permits a large gastroscope to pass into the stomach after a delay; but in the early, or in the less typical cases, without dilatation it is often exceedingly difficult to distinguish between purely spasmodic conditions and those of local lesions in the neighborhood of the esophagus but not themselves showing in compressions or very marked deviations of the abdominal esophagus. In such cases, while many esophagoscopists feel sure of their diagnosis, many do not agree as to what the endoscopic pictures are, and many endoscopists describe a picture which is seen by other endoscopists in the perfectly normal esophagus abdominalis. I believe it would be very profitable to all of us if every endoscopist present would describe the different endoscopic

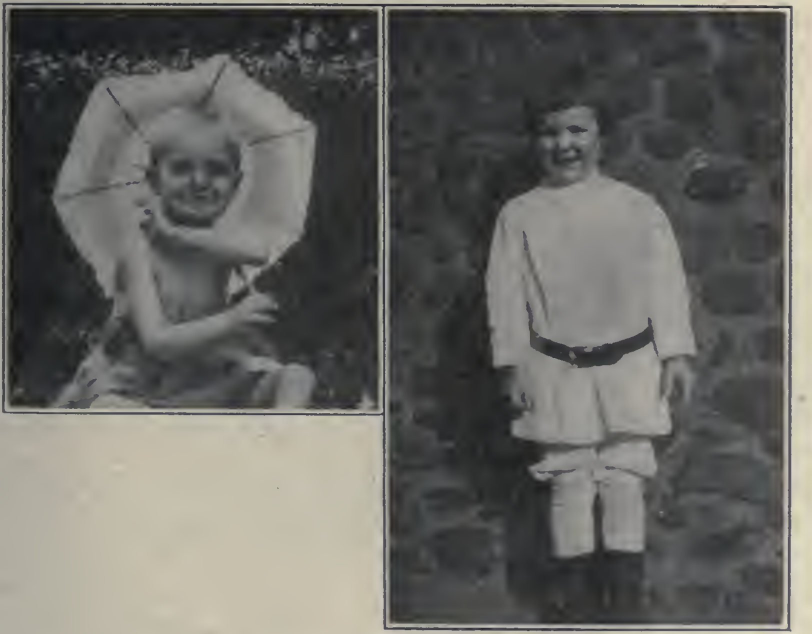

Figure 18. From photographs of a boy of 4 years. Weight when first seen, 26 pounds. After twenty-eighth endoscopic bouginage, 42 pounds. Patient referred by Dr. H. T. Price.

pictures he sees in phreno-spasm or hiatal and abdominal esophagismus. No one to-day believes in a sphincter at the cardia, and the narrowing at this point that has been shown in so many text-books on anatomy is a misfortune. Hill quotes McAllister to the effect that there is no histologically demonstrable sphincter and he states that the circular musculature at this point is weak. Brown Kelley and Williamina Abel, by careful special dissections, have demonstrated that "it is quite apparent to the naked eye that both muscular coats are of uniform thickness, and that no special aggregation of fibers exist at or near the cardia," and that "nothing was found in any of the dissections or in the anatomical works consulted to justify Dr. Hill's statement that the circular fiber musculature was specially weak in this region." As endoscopists, however, I think that it would be better for us to abandon the word "cardio-spasm" and to substitute for it the three clinical types, which, according to my observation, can be made out as existing either separately or together: One of these is spasm at the hiatus esophagus, which, from its location, and from the fact that it is the diaphragmatic, not the esophageal musculature that is active, should be called phreno-spasm or hiatal esophagismus, while that occurring below should be called abdominal esophagismus, because it is very clearly proved by the endoscopic picture, and by the radiographs, two of which are here shown, that the entire abdominal esophagus is involved in the spasm, and it is not simply a spasm of the cardia. The word cardia is properly used as the name of the esophageal orifice of the stomach. Spasm limited solely to this orifice, is certainly exceedingly rare, while spasm of the abdominal esophagus and of the esophagus at the hiatus, either separately or together, are relatively common, and should be called by their proper names. and the word "cardio-spasm" should either be dropped as a misnomer or limited to those rare cases of true cardial esophagismus. Brown Kelley has demonstrated the experimental fact that section of the vagi without stimulation, is followed by dilatation of the lower part of the esophagus and contraction of the cardia, which he rightly says corresponds to the supposed condition in cardio-spasm. But as a clinical fact, I have rarely found such a condition in the disease commonly known as cardio-spasm. It is quite certain that in a large majority of the cases there is a certain basic general nerve disorder. In one instance, a patient who was quite hysterical would get an attack of abdominal esophagismus whenever everything did not please her. For instance, she took the notion that the endoscopic divulsions that I was applying to the abdominal esophagus were doing her so much good that they ought to be done every week instead of every two weeks. Regularly the day before the one week was up, her abdominal esophagus would shut up and the dilatation above it would fill. By this I do not mean that she had voluntary control of it, but that the emotions sought their outlet through habitual nerve channels producing a recurrence of the abdominal esophagismus, which she had had since childhood. This "nerve cell habit" is one of the most frequent causes of recurrences. In certain cases, there are undoubtedly lesions of the mucosa in the esophagus and also in the stomach, which could easily excite spasms, and it is equally certain that stagnation due to the spasm, and consequent fermentation of food, detention of secretions and maceration could very easily excite or perpetuate the lesions. Thus we have a "vicious circle" in hiatal and abdominal esophagismus. Observations by Guisez, MacKinnie and also some

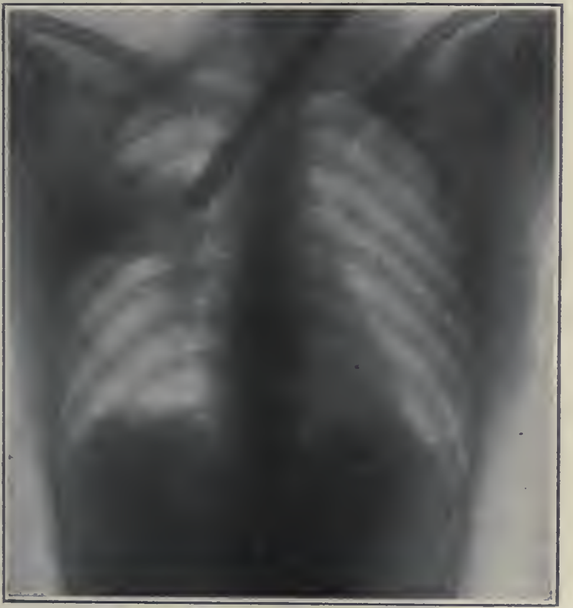

Figure 19. Radiograph (by Dr. George C. Johnston) of bronchoscope in the right upper lobe bronchus of a woman of 25 years (patient of Dr. Otto C. Gaub). The bronchoscope was inserted through the mouth and the angle is shown to be as advantageous as would be possible through a tracheotomic wound. The position of the patient is easy and natural in this instance, the radiograph being made for verification of the overlay localization in a suspected case of interlobar abscess. Had demonstration been the object, the upper part of the tube could easily have been brought to the clavicle.

observations of my own, point clearly to the fact that these lesions can produce organic stricture. The frequency with which spasm of the abdominal esophagus occurs in connection with gastric carcinoma indicates very plainly that the reflex can have its source in the stomach which seems to confirm the theory that hyperacidity may be a cause in some instances. The theory that diffuse dilatation is the cause rather than the effect of spasmodic closure of the abdominal esophagus has been negatived by Jesse Meyer, who has proved that after the cure of a "cardio-spasm" and the complete relief of all the symptoms, the dilatation of the esophagus remains. A number of observers have confirmed observations of Kovacs and Stoerk in regard to the kinking of the esophagus by enlargement of the left auricle. I myself have since observed in two cases very marked deviations from this cause. In both cases there had been no symptoms referable to the esophagus but a large mass of meat had lodged and was removed esophagoscopically. In a number of other cases an enlarged aorta has deviated the esophagus as in the radiograph shown, and Boyce has demonstrated that there is a type of "neurasthenic" patient with an enlarged but not definitely pathologic aorta, that is particularly prone to phreno-spasm and abdominal esophagismus. In these cases, Boyce has demonstrated an unusually palpable and enlarged abdominal aorta. Cases of phrenospasm and abdominal esophagismus, even more than diverticulum, remind one of the ingluvies of birds, inasmuch as the dilated esophagus fills quickly, and yet there is a constant leakage, which allows a certain proportion of the food to pass on through at a relatively slow rate. In one of my patients, the cure of the abdominal esophagismus resulted in food going through so promptly into the stomach, that taking food excited nausea for quite a long time until the stomach became accustomed to the unusual sensation of having food go through directly when swallowed. Treatment of abdominal esophagismus and hiatal esophagismus, has led to the devising of a number of different water-bags and air-bags, which have yielded good results. In some cases, however, it is impossible to introduce them. The author's personal preference, like that of Bruenings, is for a mechanical divulser inserted through the esophagoscope where the sense of touch and the precision of a steel instrument gives one an accurate control. I use the divulser of Mosher. Undoubtedly there are a few cases that are prone to recur, and the most stubborn are those existing since childhood, with consequent infantile stomach and long-established "nerve cell habit." The neurologist has cured some cases after both the endoscopist and the internist had failed. In addition to the three forms that I have mentioned, cardial esophagismus, preno-spasm and abdominal esophagismus, there are, of course, the neuroses of the esophagus higher up, but it is still, I believe, an unsettled question as to what extent these so-called neuroses have an anatomic etiologic basis. Progress has been made, but to analyze it would unduly prolong this paper.

Cancer of the esophagus: The diagnosis of malignancy here as elsewhere in the body is usually readily made by gross appearances in advanced cases, but as elsewhere, the very much to be desired early diagnosis depends upon the histologic examination of a specimen. The specimen should be ample, and should, if possible, include a little of the adjacent normal, though greater care is needed here than elsewhere as to the amount of normal that may be taken. A little of the mucosa is sufficient. The only contra-indication to the taking of a specimen is such a profoundly anemic condition that oozing which may follow may turn the balance against the patient. This anemic condition is usually only found in those cases that have been permitted to become moribund from hunger and thirst from too-long-delayed gastrostomy. In such cases the gastrostomy should be done at once and the patient fed until the specimen may be taken with safety. Unfortunately, such patients, especially if there has been a few days of water hunger, make exceedingly bad surgical subjects, so that the minor operation of gastrostomy assumes a high mortality. It is usual among endoscopists in the diagnosis of cancer to attach a great deal of weight to asymmetrical aspiratory movement of the walls of the esophagus. In doing this, it is very necessary that the patient's head be exactly in the median line and the body straight. The twisting of the head to one side is very apt to alter the symmetry of the visible normal esophageal lumen. This is demonstrated graphically in the radiograph here shown. The twisting of the child's head sidewise causes the image of the coin to be elongated owing to the fact that the coin is moved diagonally instead of antero-posteriorally by the normal respiratory movements, owing to the child's head being strongly rotated to one side. Cancer of the esophagus has at the present day 100 per cent mortality, but there is good reason to believe that the surgeon will show a certain percentage of cures as soon as physicians will promptly refer to the esophagoscopist all patients showing the slightest abnormality referable to the esophagus. Thus only can we hope to discover and treat the pre-cancerous conditions of leucoplakia, erosion, maceration, chronic esophagitis, etc. That the physician may do this without hesitation, it behooves the esophagoscopist to so perfect his technic and develop his skill that a patient may be esophagoscoped without distress and without anesthesia, or at most with local anesthesia limited to the pharynx. The work of Henry Janeway has convinced me that resection of the thoracic esophagus is a practicable procedure and will be frequently resorted to as soon as early esophagoscopies shall make the necessary early diagnosis. In the palliative treatment of inoperable esophageal cancerous stenosis, gastrostomy may be postponed by esophageal intubation in many instances until very nearly the termination of the case, though by this I do not mean that gastrostomy should be postponed one day after it is clear that nutrition is going to suffer. It is, of course, much more satisfactory to the patient to swallow his food even though it be liquid, than to have it poured in through the abdominal wall. Esophageal intubation has been very satisfactory in the author's hands. He is not prepared to say that endoscopic methods are in any way preferable to those of Charters Symonds, for the introduction of a tube. All forms of clear liquids will go through esophageal intubation tubes of 4 mm. internal diameter, and raw or very slightly cooked eggs can, with care, be swallowed with much satisfaction by the patient whose esophagus is thus intubated. In fact, any finely masticated food will go through, though occasionally imperfectly masticated particles may lodge in the smallest tubes. The author has had these tubes worn for quite a number of months without exciting ulceration, though, of course, cancerous ulceration was been better spent in perfecting the operator's personal skill in intro-already present in some instances. Of course, the tubes were removed at frequent intervals for cleaning and were replaced. It is essential to have a duplicate tube for immediate replacement, else the esophageal channel will quickly close so that a smaller tube will be needed. Eventually a smaller and a smaller tube is needed anyway, until none can be introduced.

Angioneurotic edema has been added by H. Arrowsmith to the list of diseases observed in the esophagus.

Gastroscopy: Recent developments have been noteworthy. In different parts of the world, earnest workers have been perfecting technic and instruments. It has been said that the time wasted in an effort to develop a substitute for the straight tube would have ducing the straight tube. While this may be true, it is unwise to discourage effort. It is now universally accepted that safety demands that introducing shall be with a tube devoid of a lens system, in order that lesions may be detected and avoided, and that the axis of the instrument may be readily kept in line with the esophageal axis. After the distal end of the tube has reached the stomach, a plug with a window has been used in the proximal end of the tube so that positive pressure from an oxygen tank (Janeway) or a hand bulb may be used to push away mucosal folds, and when a lens system is inserted in the tube in the form of a long tube with a window in the side of the distal end, an excellent view of the distended stomach is obtained. The author personally can testify to the beautiful view of the pyloris obtained in the Janeway gastroscope, and while the use of inflation and of a lens system for gastroscopy is at least thirty years old, yet the optical formula and the particular combination of illumination, lenses, inflation apparatus and tubes in the Janeway gastroscope make it one of the greatest of all recent advances in gastroscopy of which the author has personal knowledge. Excellent results have also been obtained by Hill, Elsner and others, and all of these instruments are now doubtless developed to a point where the personal skill of the operator counts for more than the particular instrument. The usefulness, safety and practicability of the gastroscope is an accomplished fact. The need now is for careful, skillful men who will use it. The value of gastroscopy in establishing a diagnosis in severe and obscure stomach disease has been abundantly proved. The tendency, however, to resort to it only in very serious conditions prevents its greatest usefulness, which would be in the early diagnosis of cancer and of pre-cancerous conditions. When endoscopists, who have developed the gastroscopic technic, are sufficiently numerous and sufficiently skillful so that the physician or the surgeon may feel justified in sending them cases before the patient's condition becomes desperate, gastroscopy will be of great use to the physician and surgeon, but gastroscopy probably will never be done by the physician or the surgeon himself. He will take the endoscopist's report along with that of the radiographer and analyst and decide as to the best handling of the case, just as the otologist in a brain case takes the report from the internist, the laboratory, and the ophthalmologist. Unlike tracheobronchoscopy and esophagoscopy, it may be said of gastroscopy that while its positive reports are extremely valuable, its negative reports are less so, just as with ophthalmoscopy in brain disease, the Wassermann reaction, and many other of our most valuable aids in medicine and surgery. A very important point in increasing the range of mobility of the distal end of the gastroscope in the stomach has been demonstrated by Henry Janeway. It consists in an elevation of the knees of the recumbent patient to the vertical or flexed position, as this relaxes the abdominal wall.

Mortality gastroscopy: That there is practically no mortality from gastroscopy in very careful hands has been shown by the replies to the author's circular letter of inquiry. Out of 110 cases done by eight different endoscopists there was no mortality within two weeks after operation from any cause. The author has now examined the interior of 238 living stomachs with the peroral gastroscope, and so far only one patient has died from any cause whatever within one month after the gastroscopy. As previously reported, this patient was moribund from a bleeding ulcer of the stomach when admitted to the hospital. But, taking the figures just as they stand, the mortality is only a fraction of one per cent.

Conclusion: In conclusion I wish to say that recent progress in endoscopy of the larynx, trachea, bronchi, esophagus and stomach has shown very clearly that all future progress will depend on those who have the time and opportunity to develop an organization with assistants and nurses well trained, and to develop by continual practice the skill which the musician must have with his instrument; and while it is given to but a few like Killian, Von Eicken and Bruenings to be the Paderewskis of endoscopy, yet anyone who will practice continually and keep himself in continual training, may do good work and contribute to the future progress of endoscopy.

Westinghouse Building.

Direct Laryngoscopy, Tracheo-Bronchoscopy and Esophagoscopy. LOGAN TURNER and J. S. FRASER, *Edin. Med. Jour.*, Jan. and Feb., 1913.

This paper contains a general description of the instruments and technic, and is intended for those not familiar with modern endoscopic methods. In reference to the examination of the esophagus it is laid down that the bougie should not be used in suspected cases of carcinoma and foreign body, also that no case of difficulty of swallowing should be regarded as hysterical without direct examination of the gullet. Several cases are described, two of them examples of malignant disease of the hypo-pharynx and upper end of the esophagus, in which a circular portion of pharynx and esophagus were successfully removed, one of the patients being in good health two years later.

GUTHRIE.

THE REMOVAL OF FOREIGN BODIES FROM THE UPPER END OF THE ESOPHAGUS.*

DR. RICHARD H. JOHNSTON, BALTIMORE.

The upper end of the esophagus is that portion included between the clavicle below and the cricoid cartilage above. In this area foreign bodies usually lodge because these two points are the narrowest in the esophagus. We may say that the removal of foreign bodies is limited to this area meaning about an inch and a half or two inches in length. Success in this work depends upon two factors. A proper position of the patient's head and the manipulation of a short instrument of sufficient diameter to see and to work through. Foreign bodies, especially if flat, lodge in the esophagus with the edges lateral. As a rule they are located back of the middle line which accounts for the fact that the ordinary esophagoscope slips over the anterior plane and the entire esophagus is examined without finding the object. Such cases have been reported by skilled operators. The method of throwing the patient's head over the end of the table probably has something to do with failure to locate the foreign body at once, since the tense muscles tend to force the object back. In my own work I long ago discarded extension of the head in examining the upper end of the esophagus. I am convinced that relaxation of the muscles is the most important point in the examination and this can be obtained only with the patient's head straight on the table. The elasticity of the tissues allows great freedom of movement and by manipulation with the instrument the right angle of the throat becomes straight. The foreign body immediately comes into view and is seized with forceps and removed.

One who has tried extension of the head with its difficulties and then turns to the straight method will at once perceive the advantages of the latter. There are operators who are skillful in extension but they have become so, by long experience. When the novice attempts it, it is so difficult that he is tempted to give up in despair.

METHODS OF EXAMINING THE UPPER END OF THE ESOPHAGUS.

Extension: This method has reached a high state of perfection through the work of Dr. Chevalier Jackson, and Dr. J. W. Boyce who has developed a position of the head known as the "Boyce position." Dr. Jackson emphasizes the fact that the head must be held just right which necessitates a trained assistant. In this method the head and shoulders are pulled over the end of the table and held by an assistant. The objections to extension are the tenseness of the neck-muscles, which must be overcome by pulling and the position of the instrument which is suspended in the air with the left hand and which cannot be long held on account of the strain on the forearm. For these reasons I think a simpler method is to be preferred.

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*Read at the annual meeting of the American Academy of Ophthalmology and Oto-Laryngology, Niagara Falls, August 22, 1912.

2. *Flexion*: This method was worked out by Dr. H. P. Mosher in 1908. Under general anesthesia the patient's head is turned to the left until the cheek almost touches the plane of the table. The head is then flexed on the chest. The operator sits at the left, facing the head and introduces the special spatula between the left bicuspid teeth. The tongue is pushed to the opposite side and the cricoid cartilage lifted which exposes the esophagus to the clavicle. So far as I know this method cannot be used without general anesthesia which exposes the patient to unnecessary risk. This objection does not apply to extension in which the patient's head can be forcibly held over the end of the table. It is, however, more difficult to hold the head than in the position which I will now describe. All I have said above applies to children, since a satisfactory examination can nearly always be made in adults under local anesthesia with the patient sitting.

3. *Straight position*: The position of the head is the same as in the straight method of direct laryngoscopy which I worked out in 1908. In this method the head lies straight on the table. In children up to 8 years of age no anesthetic is needed. Cocain is dangerous and since the method is designed to make esophagoscopy simple and practically free from danger, general anesthesia is not used. The little patient, securely pinned in a sheet, is placed on the table. The head is held by an assistant while the arms and legs are attended to by nurses. Jackson's old child's speculum is introduced between the incisor teeth and pushed rapidly down behind the larynx, which is gently lifted, exposing the upper end of the esophagus for about two inches or to the clavicle. The instrument may be pushed below the cricoid cartilage if desired. Since the speculum has a diameter greater than the average esophagoscope, one sees much better through it. Because of the relaxation of the muscles and the position of the instrument from above downwards and backwards, it is practically impossible to miss a foreign body which, once seen, is easily removed. With this method esophagoscopy can be done anywhere since no special assistants are needed. Since

developing the method I have used no other in the examination and treatment of the upper end of the esophagus. In adults the examination can nearly always be made with the patient in the sitting position under local anesthesia. The head is only slightly extended and the same instrument with a modified handle is used.

The speculum is introduced and the larynx pulled forward. In most cases a good view of the upper end of the esophagus is obtained. If necessary the tube may be passed down below the cricoid cartilage for half an inch or more. In this way I have succeeded in diagnosing tumors and foreign bodies. In three patients foreign bodies have been removed. From my experience I believe all foreign bodies can be removed through the esophagoscope. The most dangerous part of the work is the general anesthetic and with the further development of esophagoscopy practically all patients will be examined without it. Skillful operators use no anesthetic in children but claim that in adults ether is necessary to secure proper relaxation. This is not in accord with my experience. For many months I have succeeded in passing the esophagoscope with the patient sitting and prefer it to the prone position.

A contemporary in an article published recently makes the following statements: "Although the esophagoscope has greatly aided in the management of impacted foreign bodies in the esophagus, it has not and cannot entirely supplant the older methods. There are not a few cases in which the time-honored methods of operating are simpler, easier and quite as effective as esophagoscopy." He then describes the removal of common pins and fish bones with the old bristle bougie which he describes as an instrument than which none is more generally useful and effective and which can be employed with almost perfect safety. For the removal of coins and buttons often nothing is better than the old, bent esophageal forceps or a straight, smooth, blunt-pointed, toothless, eight-inch hemostat. He then cites several cases of foreign bodies in the upper end of the esophagus which he failed to locate for a long time with an ordinary esophagoscope because the instrument repeatedly slipped over the object.

I cannot agree with the conclusions of the author. To me it is clearly obvious that a short, wide esophagoscope in the hands of a careful, skillful operator, is far safer than blind groping with any forceps. The majority of fatalities in foreign bodies have been due to the blind use of forceps and bougies. I have never failed to locate and remove a foreign body within a few minutes with the instrument described above, and I attribute my success to the fact that it is practically impossible to miss seeing the object in the esophagus. Since adopting the straight position of the head, I have found the work much easier. The operator stands to the left of the patient facing the head and passes the instrument with the left hand leaving the right hand free for operative work. In a recent article by a contemporary, attention is called to the advantages of the short, wide speculum in the location and removal of foreign bodies from the upper end of the esophagus in children.

In the *New York Medical Journal,* September 4, 1909, I reported the following case: A child 2 years old, while playing in the street, picked up a lead disc the size of a five-cent piece and attempted to swallow it. That night she vomited several times and was unable to swallow solid food. Two days later she was taken to St. Joseph's Hospital, where it was found she was only able to swallow a little liquid. A radiograph, taken that day, showed a shadow at the seventh cervical vertebra. The next day the patient was etherized and the upper end of the esophagus examined with Jackson's child-speculum in the extended position. On pulling the larynx upward the disc was seen tightly wedged in the esophagus in a lateral position. Jackson's short forceps was passed through the tube and the disc removed.

It will be seen that the use of the short, wide instrument is by no means new.

To illustrate the improved technic in the management of foreign bodies at the upper end of the esophagus in children, I wish to cite the following case: A little girl, 2 years old, was brought to St. Joseph's Hospital with a five-cent piece in the esophagus. The radiograph showed the nickel just below the cricoid cartilage. For a week the child had swallowed liquid food only. The little patient and held by an assistant. No anesthetic was used. Jackson's old speculum was passed back of the larynx which was easily lifted. The foreign body immediately came into view located in the back was pinned in a sheet and placed on the table with the head straight part of the esophagus with edges lateral. Pfau's extension forceps was passed, the coin seized and promptly removed. The whole procedure did not take two minutes. The child scarcely had time to cry and was taken from the table unhurt. In less time than it would have taken to get ready for the extended position the foreign body was removed.

The straight method with the short instrument makes esophagoscopy one of the simplest procedures in surgery.

807 North Charles Street.

A BRIEF PATHOLOGICAL STUDY OF PAPILLOMATA WITH REFERENCE TO THEIR EXISTENCE WITHIN THE NOSE.*

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Epithelial tumors are characterized by the development of tissues which are derived from two of the blastodermic layers; the cells covering the papillae having their origin either from the ectoderm or the entoderm, although the epithelium of a papilloma as found within the nose is usually a product of the outer layer, or the ectoderm. The connective tissue, or the supporting framework of the growth over which the epithelial cells proliferate and develop, has its origin from the middle layer, or the mesoderm.

A papilloma within the nasal chambers is a comparatively rare tumor of a non-malignant character, arising from the mucous membrane, and showing a predominance of epithelium over the connective tissue elements; the relationship between the two layers, however, is dependent upon the amount of proliferative changes that have taken place within the respective tissues.

The essential and conspicuous elements of this variety of tumor are the epithelial cells; the supporting structure, as a rule, being no more than slender stalks of connective tissue carrying within their meshes ill-developed vessels, with a scattering here and there of small. round cells. The two layers are separated by a delicate basement membrane, which is regarded as a derivative or a modification of the subjacent connective tissue. As the result of this dividing membrane, therefore, it will be seen that the proliferating epithelium forming the tumor proper is outside of the vascular area, and while these cells contain no blood-vessels of their own, the necessary nutrition is maintained by the absorption of juices of a nutritive nature which pass to the cells by way of the minute clefts within the intercellular substance.

In the development of papillomata, the new cells have their origin in close proximity to the vascular area, but as previously mentioned, separated from it by the membrana propria. They are usually arranged in an orderly manner and appear with marked persistence in normal relation to the basement membrane. As the cells develop and become older, they show a tendency to lose the liquid part of their contents. This is the result of the pressure to which they are subjected through their more distant removal from their origin by the development of newer cells, and also in consequence of their exposure to external influences on the surface. The naked-eye appearance usually shows the papilloma of the nose to be composed of branched processes, and the whole mass to resemble an immature cauliflower.

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*Presented as a candidate's thesis to the American Laryngological, Rhinological and Otological Society, May, 1912.

Of the two varieties of papillomata, the squamous-celled is the more frequently found within the nose, in spite of the fact that the greater part of the nasal cavities is lined with columnar cells, the remaining portion having a specialized epithelium. According to the older writers, the chief histological difference which distinguishes the two varieties lies in the character of the epithelium. A papillary tumor covered with proliferating squamous epithelium was considered by these investigators as hard, even though the palpable sensation imparted may not have been as firm as in a growth with a greater amount of stroma, but supporting columnar epithelium. This latter condition they designated as soft.

It will be seen, therefore, that in spite of the fact that a liberal proliferation of the connective tissue cells may have taken place in a papilloma covered with columnar epithelium, and the growth may in reality be firmer than the squamous-celled variety, according to the foregoing classification, it would be considered soft. It may be true that under the microscope, the arrangement of stratified squamous cells may be such that the impression of a certain degree of firmness is given; while columnar epithelium, with frequent modifications, often assuming the shape of goblet cells, may give the idea of a less degree of density, and therefore be considered the characteristic cells of the soft variety.

Thus, as the nomenclature of the past appears to permit an incorrect and unsatisfactory classification of epithelial tumors, I make bold to declare against the further use of the terms hard and soft, and advise that a more definite classification be made which will harmonize with the recent views on the subject, suggesting the arrangement of papillomata according to the character of the epithelium into squamous-celled or columnar-celled. With this distinction in mind, the embryological difference may also be significant, for we find the former are developed from the ectoderm, while the latter, as a rule, are not found within the nose, but have their origin from the mucous membrane lining the hollow viscera, and are paved with epithelium which is derived from the entoderm.

The degeneration of a papilloma into a malignant tumor is most likely to take place in those growths whose situation frequently exposed them to irritation. The development of such a change indicates a disturbance or loss of the normal relationship between the epithelial cells and the underlying connective tissue. A modification is also evident at the same time in the histological structure of the cells of the benign tumor and in its environments. As long as the basement membrane, which limits the downward growth of the epithelium is intact, the tumor retains its benignancy, but the moment this normal barrier is destroyed as the result of prolonged and repeated irritation, or it may be in consequence of a marked predisposition, embryonic cells are permitted entrance into the vascular area, and the transformation from a benign tumor to one of malignancy is thereby encouraged, with manifestations in time of symptoms of carcinoma.

The development of the epithelium in papillomatous growths is significant. In the benign tumor the cells proliferate toward the surface, the mucous membrane retains a healthy appearance and does not become infiltrated; but when malignancy takes place, the epithelium shows a tendency to penetrate into, and to proliferate within the subjacent areas, and to implicate the surrounding tissue, producing a stiffness of the part.

To what extent this transition takes place in papillomata appears to be a point more or less disputed. That such a change does take place in other parts of the body is an accepted fact, but owing to the infrequency of papillomata within the nasal chambers, little opportunity has been afforded for extensive study; nevertheless the literature records one or two instances in which the actual transformation was followed practically throughout its entire development.

While it is doubtful if degeneration of a papilloma of the nose into a sarcoma has ever been detected, such a change has been recorded as having taken place in a papillary growth of a joint. Postnatal embryonic cells within the connective tissue-part of the tumor are held as being responsible for this degenerative change. May not some of the sarcomata within the nose owe their origin to a papillary growth, the benign tumor not being detected until malignant changes have taken place and developed to such an extent as to destroy all trace of the primary tumor, and even before the evidence of a new growth has manifested itself? To some, this may seem impossible, but with the study of the formation of tissues, we find that the structure and the character of a new growth is influenced almost entirely, or is dependent upon, the stage of arrested cell development, and the embryonic layer from which the matrix has its origin. The connective-tissue portion may readily be the part affected and responsible for the production of the new growth.

With the occurrence of a papillary tumor within the nose, the difficulty of determining its true nature is evident by the similarity in its gross appearance to other growths found in the same locality. In the majority of cases the microscope is the only deciding means.

From the diagnostic standpoint, carcinoma presents a distinguishing feature, in that almost without exception there exists a certain degree of induration at its base, which condition is never found in the benign papilloma. The microscopical appearance shows the presence of epithelial cells beyond their normal zone, and when these elements exist, even in a limited number, within the sub-epithelial tissue, it is distinct and positive evidence of malignancy. In time, disorganization of the part affected will take place, and a tendency to metastatic distribution will be manifested. The dissemination of carcinoma cells, the tendency to involvement of adjacent tissues, and a more or less rapid development is in distinct contrast to a papilloma, which is non-irritating, remains local, and is of slow growth.

An inflammatory swelling of a papillary nature may be the source of confusion; however, its sudden appearance, the tendency to multiplicity, and definite signs of inflammation are characteristic; and further, the microbic cause of the lesion can usually be ascertained. A minute examination of the tissue will show distinct evidence of inflammation as the result of the organismal infection. The existing proliferation can be traced to the action of the offending organisms or their toxins, upon pre-existing, mature tissue-cells, whereas in papilloma, the increase of tissue is the result of proliferation and development of embryonic or pre-existing immature cells, which are not utilized in the growth and development of the part.

For many years Hopmann and his followers were led astray by the existence within the nasal chambers of polypi, which had assumed a folded, convoluted or furrowed appearance, undoubtedly as the result of the pressure to which they had been subjected in the limited space in which they were found, and which were classed by these investigators as papillomata. It remained for Wright, however, in 1891, to point out with unusual clearness the existing error, and to show wherein the two conditions are readily differentiated. He was able to demonstrate beyond doubt that the former results from changes within the connective tissue, with no break in the regularity of the surface epithelium; while proliferating epithelial cells, within restraint by the basement membrane, are responsible for the benign papillomatous growth. Later contributions of note by Douglass, McKinney, Arrowsmith and others corroborated the above views, and further established the differentiation between the two conditions.

Papillary hypertrophy of any one of the turbinal bodies may exist, and will often necessitate the most careful scrutiny to differentiate it from papilloma. Here, also, the change causing the enlargement takes place within the connective tissue underlying the epithelium and forming its support. The line of the surface epithelium, as a rule, is not disturbed, while in papillomata the microscope shows that the thickening and irregularity of the epithelial elements are marked, and a decided budding appearance of the surface is presented.

The study of papillomata of the nose, or any tumor for that matter, soon makes one cognizant of the difficulty often encountered in attempting to make a positive diagnosis of the existing lesion without the aid of the microscope. It is certain that even if the macroscopical appearance does indicate to a satisfactory extent the nature of the growth, it is impossible without the examination of sections to detect the earliest penetration of the basement membrane by epithelial cells, which might mean the saving of much discomfort, and maybe the patient's life. The differential diagnosis is usually not difficult if one bears in mind the normal relationship between the tissues involved.

78 North Clinton Avenue.

Diphtheria Bacilli in Secretions of Nose and Throat in Infants With Nutritional Disturbances. E. Conradi, *Muench. med. Wchnschr.*, March 11, 1913.

In the course of one year Conradi found diphtheria bacilli twice in the throats and eight times in the noses of infants suffering from digestive disturbances, but with no manifestations of diphtheria. Though these bacilli appeared in the secretions for from two to four months, they displayed no specific pathogenic properties.

Ed.

SUGGESTIONS IN ACOUMETRY.

PROF. G. GRADENIGO, TURIN, ITALY.

The suggestions refer to the "vocal" hearing tests as well as to tests by means of simple musical tones.

A. Vocal tests: Owing to the limited dimensions of available rooms in common practice, and also with a view to excluding the ear not involved, the hearing is usually tested by means of the so-called "vox aphona" or whispered speech. Still there is no doubt as to the convenience of testing the hearing with conversational speech also, inasmuch as there is no constant relationship between hearing distances for whispered and conversational voices, and, besides, it is most important to hear the conversational speech in social life. In forensic practice and for army recruiting purposes, for instance, the hearing-power ought to be tested with regular conversational speech.

At the International Otological Congress in Budapest I suggested the name "index vocalis" for the ratio between auditive distances for whispered and conversational voices. Thus, *i. v.* the index vocalis, *v.* the distance for whispered voice, *V* the distance for conversational voice, we could assume a general formula: $i.\ v. = v/V$. In other words, the index vocalis would be represented by a fraction. where the numerator expresses the hearing-distance for whispered voice and the denominator the distance for conversational voice.

Finding the value of such a fraction may prove useful: 1. Practically just to get an idea of the hearing-capacity of a patient in social life. 2. Clinically, as a hint for diagnosis: We may anticipate indeed that the different diseases of the auditory apparatus will behave in different ways as to the ratio between the auditory distances for these two kinds of speech.

To make the test as simple as possible, I proposed that only vowels and even only the five fundamental ones: *a e i o u,* as pronounced in the Italian language* be employed.

A number of experiments out of doors and in practically noiseless places were carried out by the writer to determine the hearing distances for vowels uttered in whispered voice of medium intensity and in regular conversational voice. I found that, in the open, the average normal distance is 15 to 20 meters for the vowels *o a e i,* and only 4 to 6 meters for the vowel *u.* As for ordinary conversational voice the figures given by Wolf in his classical work appear exaggerated according to my researches: I found, through repeated investigations, about 100 meters for the vowels *o a e i,* and about 80 meters for the vowel *u.*

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*A as in father; e as in very; i as in winter; o as in lord; u as in rule.

Now we are enabled to figure the average normal value of the vocal-index, as it results when measured in the open. For the vowel *u*: 5/80 to 6/80=1/16 to 1/13, an average of 1/15; for other vowels, *o, a, e, i*: 15/100 to 20/100=1/6, 60 to 1/5; an average of 1/6.

Be it understood that only approximate figures are obtainable no matter how simple and accurate the test may be made.

In clinical practice the determination of the index vocalis is difficult, for it is impossible to exclude the other ear, even in spite of hermetical closure, when its auditus is a sufficiently good one. Gradenigo and Stefanini studied several methods to prevent the non-involved ear from hearing conversational voice at all, or, at least, to reduce the ear's auditive distance for conversational speech under 5 meters, but they did not yield satisfactory results. In spite of such limitations, the research of the *index vocalis,* when possible, proves of great practical value in clinical work. The following possibilities may be expected:

1. All vowels uttered with whispered voice of medium intensity are perceived at a distance of 5 meters or more: the index cannot be determined indoor in such cases.

2. All vowels, or some of them, are perceived at a distance of under 5 meters, with whispered voice; with regular conversational voice all of them are heard at 5 meters and perhaps more. Then the index vocalis is undetermined, but it may be represented by a fraction having as numerator the measure in centimeters of the auditive distance for a certain whispered vowel, and as denominator the symbol 500 (more than 5 meters).

Let us suppose, for instance, that all vowels, except the *u,* be heard and, of course, repeated by the patient at 5 meters and perhaps more, and that the *u* be caught and repeated at a distance of 2 meters: The index vocalis for the vowel *u* would then be represented as follows: (*u*) *i v*=200 greater than 500.

All vowels, or one or more of them are heard at distances of under 5 meters, i. e. at distances easily estimated in a consulting room.

In such cases two extreme values of the index vocalis are likely to be found: one which approaches very close to the unit without attaining it, and another one represented by a very small centisimal figure. Here are two examples:

In some professional affections of the labyrinth the vowel *i*, whispered. is heard only very close to the ear, let us say, at two centimeters: the same vowel uttered in conversational voice may be perceived at four and a half meters. Then the index vocalis would be: (I) i. v=2/450=1/225, which value is far smaller than the average normal index for vowel *i*, (1/6, as said above).

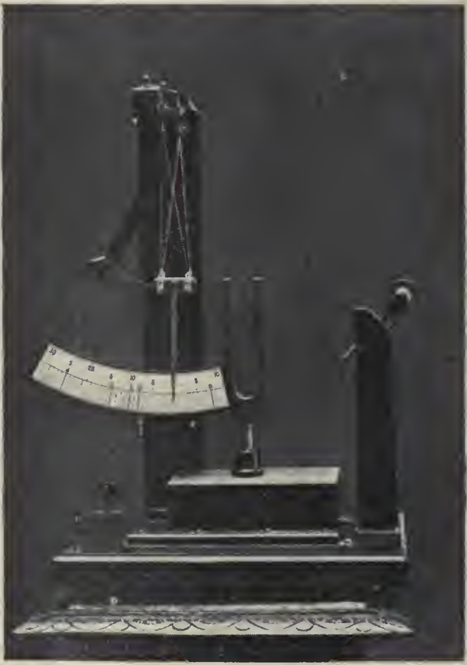

Figure 1.

In certain forms of dry catarrh of the middle ear, the vowel *a* may be heard, when whispered, at a distance slightly shorter than when pronounced with conversational voice,—let us say 2 meters for whisper and 3 meters for conversational voice. The index vocalis would be: (A) i. v=200/300=⅔. The determination of the vocal index is of peculiar importance in medico-legal statements: hence an out-of-door test is to be highly recommended in forensic examinations.

Any time the indoor tests cannot lead to a satisfactory determination of the index vocalis, I should suggest to state the auditive distances for each single vowel, uttered with whispered voice of medium intensity, as even this test can yield valuable hints for a diagnosis. As to height of pitch the vowels may be arranged as follows: *u, o, a, e, i; u* is the lowest, *i* is the highest pitched. We do not care to analyze now the exact tonality of the vowels, inasmuch as most experimenters do not agree about this difficult question.

When the hypo-acousis is due to an affection of the sound-transmitting apparatus, the perception of the lowest tones is outmost impaired: thus the vowel *u* being the lowest pitched, it will be also the least audible; the perception of high tones, and for vowels of the *i*. is chiefly impaired in diseases of the perceiving apparatus; in mixed forms the perception of the *u* and *i* will prove deficient; while a rather satisfactory hearing power could be ascertained for medium pitched vowels, i. e., for *o, a* and *e:* in severe labyrinthine diseases the auditive defect might be very evident for the vowel *e*, which, as to pitch, approaches *i* the nearest.

The vowel test is exceedingly simple: it eliminates, on the patient's side, any psychical and intellectual interference; furthermore it is available in any language and country.

B. Tonal tests: A really scientific development of otological physio-pathology cannot stand on other ground than correct determination of the hearing for the different tones of the musical scale. Yet, by taking as a measure the mere duration of the sound of a vibrating tuning-fork, i. e. the time while its sound is perceived by the diseased ear compared with the duration of the perception for the same sound by a normal ear, only deformed images of the patient's hearing power are obtained. It is true that even such deformed representations may give some coarse idea of the hearing capacity in most cases: nevertheless they are always far from being correct. Likewise, considering the deformed optical images given by cylindrical mirrors, concave or convex, we could easily tell a fat short man from a thin tall one, but we would not take the man's picture from such an image.

Professor Stefanini and the writer have tried to find a method of acoumetry that would be physically correct and on the other hand would comply with the requirements of practical work.

For medium and high-pitched tones we use tuning-forks. As every tuning-fork has its own characteristics as to duration and intensity of the sound, it is necessary to find them out before using the fork: in other words the fork itself must be previously tested with a normal ear (standard test).

Our method for tuning-forks is quite simple and stands on two fundamental rules, very easily remembered: 1. For a given tuning-fork, the work to be done, i. e. the power required to obtain a defined initial intensity of the sound, is proportional to the square of said intensity. Thus to get from the same tuning-fork the intensities of sound equal to 1, 2, 4, we must use percuting powers equal to 1, 4, 16, respectively.

2. When the initial intensities of the sound increase in the progression 1, 2, 4, the increase in duration of the sound from one intensity to the next, is constant: i. e. the duration of the sound increases proportionately in seconds from intensity 1, to intensity 2, as from 2 to 4, and so on. The calculations upon which the above quoted rules stand, have been discussed in detail by Professor Stefanini: besides, these rules are fully demonstrated experimentally. Our acoumeter consists essentially of a tuning-fork; the low and medium pitched forks are mounted on a proper resounding box. The fork is so placed that it can be struck by a wooden pendulum bearing a metal percusor; the pendulum has a quadrifid thread suspension device, which, besides being inexpensive, permits the pendulum to strike the fork always in an uniform way. Lateral deviations and friction resistances, which latter are likely to change owing to several circumstances in pendula oscillating on a metallic suspension, are thus

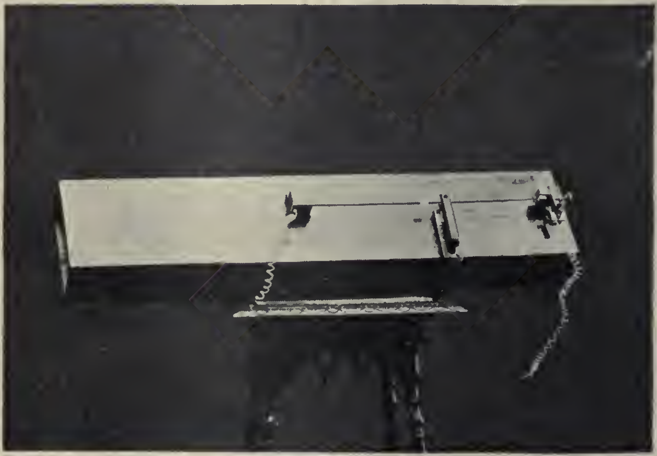

Figure 2.

avoided. The different heights, where the pendulum may be let go from, are read on a graduated arc that follows the trajector of the pendulum, as shown in Figure 1. The heights corresponding to the initial intensities 1, 2, 4, are marked in red on said scale of our acoumeter.

The sound obtained is audible even at some distance: there is no need of any conveying apparatus. Hence we eliminate the causes of error when the prongs of a vibrating fork are brought close to the meatus, or when the sound is conveyed to the ear through rubber tubes. We should advise placing the fork only half a meter from the ear to be examined at; this will prevent the phenomena of resonance or of acoustic interference affecting the results, as we stated happened in usual tests, and especially when almost pure tones are employed.

The best way to ascertain the peculiar qualities of a given tuning-fork as to duration of perceptibility of its sound for normal ear, that is to standardize such fork to enable us through it, by comparison, to ascertain the hearing power of a pathological ear, is to use a graphical method, as for temperature charts. Here, instead of temperature, degrees, days and hours, we should register the different durations of the sounds in seconds, and the different powers employed; we place the durations on a vertical line, and the powers, proportional to 1. 2. 4., on a horizontal line, using cross section paper with small squares of one square millimeter. The powers must be inscribed at a distance of 10 mm. from each other, in order that Prof. Stefanini's table, where final results are readily figured, may be used.

As the tuning-fork test for normal ears (standard test) is not exempt from difficulties, which would take too long to discuss here but which do not depend on the method itself, it is advisable to take as standard the average result of several examinations.

Now let us assume we have marked on the cross-section paper the results given by a normal ear, that is the results of a standard test: let us suppose also that in such record a duration of perception of 20″ corresponds to power 1, one of 25″ to power 2, one of 30″ to power 4, and so on (as stated above, when intensities are successively doubled, the duration of the sound increases in a constant rate); then by drawing on the chart a line connecting the corresponding marks, we shall get a straight line which is called a "logarithmic straight line."

Let us suppose now that in a patient the sound provoked by the power 2 be heard only during 10″, in stead of 25″ (normal): we mark this result on the chart, and then we count how many small one sq. mm.-squares are lined horizontally between the mark and the logarithmic straight line or its prolongation; consulting the above-named calculation table, we shall find out the corresponding value of hearing power for said tone and for said intensity. In the present instance the number of the squares would be 30, and the corresponding degree of hearing power given by Stefanini's table is 0,12.

Our acoumeter is intended for determination of the hearing in the musical compass of the tonal scale. We suggest using for the deep part of the scale the 64 double vibration and the 128 double vibrations: for the medium part the tone c^2 (512 v. d.) and as high notes c^4 of g^4, both which do not require any resounding box.

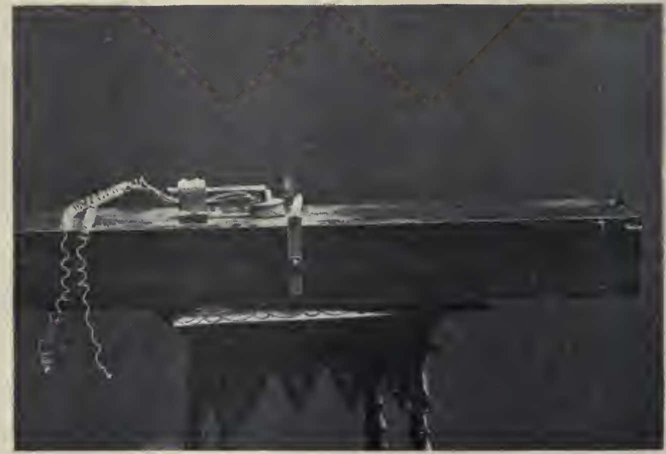

Figure 3.

It is unnecessary to point out that by means of the data obtainable from accurate examination of the hearing in these three zones of the compass, and by stating also both its inferior and superior limits of audibility, we are enabled to state and to represent readily, even in common practice, a quite correct "campus auditivus."

Considering that the initial intensity of the tones of low-pitched tuning-forks is usually too small, no matter if a resounding box is used or not, Prof. Stefanini and the writer lately thought of using a very simple apparatus instead, Figure 2. A metal ribbon stretched between the poles of a magnet and mounted on proper resounding box, starts to vibrate as soon as an alternative electric current is sent through it, provided that the tension of ribbon, which can be regulated by means of a screw, be such that the tone given by transversal vibrations of the ribbon has the same "period" as the alternative current. Latter must be reduced. of course, to a convenient intensity through a rheostat; the vibration of the amplitude depends on the intensity of the current, and is therefore regulated by the rheostat.

In Lucca this apparatus yielded the *a* of the large octave (108 v. d.; length of wave m. 3, 126): the tone given by the street current in Turin was of 90 v. d., about the fa² (or fis) of the large octave, with a wave's length of about 3.718 meters. The intensity of the sound is judged by the amplitude of vibration of the ribbon, made apparent by means of a device of the writer's optical method.

In another instrument of ours we obtain a sound from a metallic plate or lamina, set on vibration by means of an electro-magnet connected with alternative current. The amplitude of vibration and, subsequently, the intensity of the sound is shown on a millimeter scale through a thin wire attached to the plate.

Both these instruments produce almost pure deep tones, with a greater maximum intensity that it is obtainable from tuning forks. If alternative current is not at hand, and only direct current is available, it is quite simple to transform the latter into an alternative one by means of the usual rotative transformers employed for endoscopy, and then to operate through it either the ribbon or the lamina of the above described apparatus.

STEFANINI'S CALCULATION TABLE.[*]

Million	Hearing power	Million	Hearing power	Million	Hearing power
m/m 1,—	0,93	m/m 16	0,33	m/m 42	0,054
1,5	0,90	17	0,31	43	0,051
2,—	0,87	18	0,29	44	0,047
2,5	0,84	19	0,27	45	0,044
3,—	0,81	20	0,25	46	0,041
3,5	0,78	21	0,23	47	0,038
4,—	0,76	22	0,22	48	0,036
4,5	0,73	23	0,20	49	0,033
5,—	0,71	24	0,19	50	0,031
5,5	0,68	25	0,18	55	0,020
6,—	0,66	26	0,16	60	0,015
6,5	0,64	27	0,15	65	0,011
7,—	0,62	28	0,14	70	0,008
7,5	0,59	29	0,13	75	0,005
8,—	0,57	30	0,12	80	0,004
8,5	0,56	32	0,11	85	0,003
9,—	0,54	33	0,10	90	0,002
9,5	0,52	35	0,09	100	0,001
10	0,50	36	0,08	105	0,0007
11	0,47	37	0,077	110	0,0005
12	0,44	38	0,072		
13	0,41	39	0,067		
14	0,38	40	0,062		
15	0,35	41	0,058		

TREATMENT OF PERSISTENT OTORRHEA IN INFANTS AND YOUNG CHILDREN BY THE ESTABLISHMENT OF POST-AURICULAR DRAINAGE.

PRELIMINARY REPORT.*

DR. WENDELL C. PHILLIPS, NEW YORK CITY.

The term persistent otorrhea in infants and young children, as herein used, applies to those cases in which an acute purulent inflammatory process invades the middle-ear spaces and continues without abatement for an indeterminate period after the usual five to thirty days, which ordinarily may be considered as its normal course. This type of purulent otitis media should be differentiated from that other and rather common class which may be termed recurrent, in which recovery takes place from each attack only to be followed by recurrences at varying intervals usually as a result of an acute rhinitis. Children of the latter class are invariably the victims of hypertrophied tonsils and adenoids and their attacks usually cease upon the removal of these offending tissues. The recurrent type, therefore, is to be eliminated from this discussion, unless the otorrhea finally becomes persistent and chronic. A typical case of persistent otorrhea, of the type under consideration, presents a history somewhat as follows: Consequent to such form of infection which involves the upper air-passages, such as grip, the exanthemata or pneumonia, an acute middle-ear suppuration appears. Weakened by the primary general infection, the child's resistance is lowered and in many instances some underlying dyscrasia, known or unknown, adds its quota to the lowered resistance. From the outset, the discharge is profuse, persistent, and of a character which plainly bespeaks a severe type of infection. The usual diminution in quantity which in ordinary cases appears from the third to the seventh day, does not take place, but the temperature becomes normal, or nearly so, pain is not present thereafter and there may be no marked drooping of the postero-superior canal wall. The usual local measures of treatment consisting of paracentesis, cleansing, cathartics and rest in bed may have been carried out in full, although in many instances clinic patients have received no treatment at all.

It soon becomes evident that the small tympanic cavity proper could not secrete the amount of pus which flows from the ear, and one is forced to the conclusion that the aditus and mastoid antrum at least must be involved. It is evident that such a discharge continued beyond about the third week furnishes evidence that the case is rapidly becoming chronic and calls for a different form of treatment.

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*Read at the meeting of the American Laryngological, Rhinological and Otological Society, Washington, D. C., May 9, 1913.

It is true that proportionately a large number of persistent otorrheas are found among the poor and ill-nourished which apply for hospital or dispensary treatment.

Of the underlying dyscrasias which almost invariably prevent nature's efforts, aided by efficient local treatment, from affecting a cure of acute purulent otitis media, tuberculosis and syphilis are the most stubborn to deal with and all writers agree that a considerable proportion of the chronic otorrheas are tuberculous in character. In these, local drainage from the membrana tympani does not seem to avail, and the disease progresses for long periods, and often with serious and fatal complications. Inanition from other causes also commonly results in delayed cure. Severe types of infection, such as diphtheria, measles, pneumonia and grip are obstacles difficult to overcome. In many of the latter cases, however, there is a more or less rapid development of positive mastoid symptoms, hence, they are not to be considered in this discussion.

Treatment:—Regarding the treatment, we do not advise any operative interference until all reasonable local measures have been faithfully carried out, this to include free drainage by paracentesis, a clean regime of local treatment and attention to hygiene and the general health. In certain patients who are the victims of markedly hypertrophied tonsils and adenoids and the purulent otitis has progressed beyond the temperature stage, it may be wise to delay post-auricular drainage for a short time and remove the tonsillar and adenoid masses. All these measures having failed, the wisdom of surgical interference must be considered, and in the writer's opinion, the quickest, safest and most rational measure to pursue is to establish post-auricular and, hence, through and through drainage by means of the simple mastoid operation.

The reasons are as follows: 1. It quickly terminates an otherwise persistent otorrhea. 2. It insures against an extension of local bone necrosis. 3. It prevents the case from becoming a chronic purulent otitis media, with all that the name implies regarding a chronic offensive discharge, loss of hearing, bone necrosis and possible serious and fatal complications. 4. Finally, the most important reason is, the restoration and retention of the hearing-function.

It need not be added in this connection that this operation is not a dangerous one, neither is its slight seriousness to be compared with the dangers and discomforts attending a chronic aural discharge.

In the considerable number of operations which have been performed by myself and assistants, I have been surprised at the frequency with which the pus escapes under pressure through the opening made into the mastoid antrum. Granulation-tissue is also present, and in several cases an exposed sinus or dura has been found. These cases, when operated upon, have complained of discharge for from six weeks to five years. In the more chronic ones, the simple mastoid operation has sometimes proved insufficient and the radical mastoid operation has become necessary. In a few cases a similar procedure has been employed in adult patients and one or two reports of these may come out in the discussion.

It may be stated, however, that in young children, when performed any time between four weeks and three months, the results have been most favorable.

In a subsequent paper, I hope to give definite statistics of value. Others of our members no doubt hold the views herein outlined and it is hoped that these somewhat desultory remarks may bring out a valuable discussion.

40 West Forty-seventh Street.

Suggestions on Phenol and Ichthyol in External Otitis. J. H. Nelson, *Jour. A. M. A.,* March 8, 1913.

Nelson reports exceedingly good results from the use of a mixture of phenol and ichthyol in glycerin in otitis externa diffusa and myringitis, otitis externa circumspecta ("furuncle of canal") and in connection with other treatment as good as in ear-drops in acute otitis media, and especially good in otitis externa caused by complicating chronic suppurative otitis media. Tampons soaked in this solution and used as packings in connection with 2 per cent boric irrigations were used with splendid results in a series of cases averaging from 1,000 to 1,200 per month during one year at the eye and ear clinic, Colon Hospital, Cristobal, Canal Zone.

DIFFERENTIAL DIAGNOSIS AND TREATMENT OF ACUTE LABYRINTHITIS.*

DR. L. L. HENNINGER, COUNCIL BLUFFS, IOWA.

In looking over the recent otological literature we are impressed with the volume of space devoted to the discussion of the labyrinth and allied structures in the comparatively short space of time since the attention of the medical fraternity has been directed to this particular field of scientific knowledge by the researches of Jansen, Barany and others.

With the experimental and clinical findings of Barany in the almost unlimited material at his command in the Urbantschitsch Clinic, Vienna, originated the first intelligent conception of the mechanism and importance of nystagmus in vestibular disease, and his discoveries in this field at once gave impetus for further original work along the same line, and this impetus has shown no appreciable abatement at the present time.

To Jansen who first suggested the opening of the labyrinth as a means of combatting the further progress of a purulent invasion of this deeply situated organ, and to Barany who is the acknowledged pioneer in the development of the means of diagnosis, however, is due the greater credit, and to them also is due the homage of the profession for their valuable contributions to the annals of otology.

Notwithstanding the wealth of literature on the subject of labyrinthitis, the various writers heretofore have signally failed to agree upon a definite attitude and course to pursue once the symptoms of this disconcerting complication makes its appearance.

Gradually, however, the consensus of opinion begins to crystallize into more definite and harmonious knowledge and the ideas of individual observers more frequently coincide. With the advent of better operative technic and more accurate means of diagnosis and differential diagnosis, grows apace a lower mortality rate and a more hopeful prognosis from operative interference where such is indicated.

Acute labyrinthitis may be either of a serous or a purulent nature and arises from an invasion of the labyrinth by some extraneous agent, either toxins or pathogenic germs, and may be either diffuse or circumscribed. It arises as a complication in acute or chronic suppuration of the middle ear and mastoid, and also during the course of severe general infections, as diphtheria and scarlatina. It spreads to the internal ear through the oval or round window by direct extension or through a fistula in the bony walls, the result of erosion and necrosis incident to the severe suppurative process.

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* Read before the Omaha Ophthmological and Otological Society, February 20, 1912.

The onset of labyrinthine invasion in typical cases is characterized by certain definite symptoms, modified of course in individual cases by the severity of the general symptoms and the character of the infective agent. In serous labyrinthitis the onset may be sudden or gradual, the temperature may be normal or slightly elevated; pulse usually rapid. The patient often complains of tinnitis, dizziness, nausea, and disturbance of equilibrium. The hearing is greatly reduced, but the vestibular apparatus responds to stimulation. Spontaneous nystagmus is present and is directed toward the diseased side. This is in the early stages or in mild cases with a gradual onset. Those cases of sudden onset present a picture difficult to differentiate from the purulent type.

Facial paralysis may exist as a complication and is due to a serous exudation around the perineurium or in the nerve itself. Recovery is the rule.

The advent of purulent labyrinthitis ushers in a long train of symptoms, nausea and vomiting, fever (possibly already present from the primal disease), headache, tinnitis (early), deafness later, nystagmus, loss of labyrinthine irritability and vertigo. The onset is usually sudden and marked by a distinct rise in temperature, often accompanied by facial paralysis. The nystagmus is directed towards the diseased side at first, but as the disease process advances and the end-organs of the vestibular nerve lose their function, the nystagmus is directed towards the sound side. This action is explained by some authors as an evidence of increased irritability of the sound labyrinth. The vertigo and disturbance of equilibrium continues for several days, and the patient unable to assume the erect position, lies on the side towards which the nystagmus is directed, as in this way he experiences less subjective sensations from the nystagmus. This is due to the fact that the distressing symptoms of vertigo, nausea, etc., are increased when looking toward the side of the rapid component, hence in the position as stated above he must look away from the direction of the nystagmus and the discomfort is thus lessened. All efforts to stimulate the vestibular apparatus by turning, application of the caloric tests, etc., are futile of results. By applying Neuman "Laerm-apparat" to the sound ear, the diseased ear is found to be incapable of detecting the most penetrating sounds. In cases with favorable termination the symptoms abate after several days, the subjective symptoms disappear and vertigo is only experienced on suddenly turning the head. Nature has thrown up protective barriers in ten or fifteen days, spontaneous nystagmus disappears and the vestibular apparatus passes into a state of latent destruction.

As a complication incident to a purulent labyrinthitis, meningitis may supervene, also a cerebral or cerebellar abscess,—the latter being by far the most frequent, owing to anatomical structure and intimate relation of the parts. Sinus thrombosis by way of the superior petrosal is not uncommon.

Cerebellar invasion may be brought about in the following ways: (1). Through the aqueductus vestibulae. (2). Through the aqueductus cochlea. (3). By way of the internal auditory meatus. (4). Porus accusticus internus and internal auditory meatus. (5). Fistula in the semi-circular canal.

When considering the course, prognosis, and tendency to complications of labyrinthitis, the importance, in my opinion, of the nature and virulence of the infective agent in relation to the anatomical and clinical course of the labyrinthitis has not, up to the present time, been properly appreciated. Although investigations in connection with the microbes concerned with the suppurative processes of the brain have not been lacking, I have been unable to find much in the literature of the subject that suggests that the histo-pathology and clinical peculiarities of labyrinthitis are essentially related to the nature of the bacteria. Thus the diplococci with their characteristic peculiarity of producing an abundant secretion of fibrin in the blood would be more prone to localize the process by throwing up the protective banks of fibrin material which contains numerous polynuclear leucocytes.

The existing channels of communication between the labyrinth and the brain and meninges are minute and this action in a germ of not too virulent nature would in many cases prove effective in staying the process. Again, the capsulated bacteria, while none the less destructive, are slower in their action and consequently less violent in onset, giving nature an opportunity to throw up these barricades, which means so much in limiting disease.

Acute purulent labyrinthitis must be differentiated from cerebellar abscess, as nystagmus is such a prominent feature in both conditions. According to Neumann, we may assume that if nystagmus towards the affected side exists, it may be due to a beginning or circumscribed labyrinthitis or a cerebellar abscess. The irritability of the labyrinth in circumscribed labyrinthitis is frequently still intact, but in this case we would have the fistula symptoms,—increased density or rarefaction of air-pressure produces nystagmiform ocular movements. On another case irritability on irrigation is abolished, but at the same time nystagmus is produced by direct pressure and by galvanic current.

Under these circumstances, according to the same author, a cerebellar abscess cannot be excluded prior to an operation on the labyrinth. He performs the con-joint radical mastoid and labyrinth operation. After the labyrinth operation, the nystagmus, if due to the labyrinth must incline towards the normal side. If, however, in such a case after the labyrinth operation the rotatory nystagmus should be directed towards the diseased side, an immediate diagnosis of cerebellar abscess can be made, as a destroyed labyrinth never in uncomplicated cases results in nystagmus towards the same side. I mentioned earlier in this paper that given a destroyed labyrinth on one side, nystagmus toward the normal side proceeds from the normal labyrinth on the opposite side. If, subsequent to the labyrinth operation, the nystagmus is still directed towards the diseased side, it must proceed from the cranium, owing to irritation of Deiter's nucleus or the nervus vestibuli of the brain.

Again, given a nystagmus towards the sound side, and the labyrinth not irritable, the ocular movements in this case may originate either from the labyrinth or from the cerebellum. If due to the labyrinth it will subside in the course of a few days while in the same time, if due to cerebellar abscess, it would be increased.

Bárány, in a series of articles representing much original experimental and clinical observation, has proved that in intra-labyrinthine affections the kinesthetic sense has been in no way interfered with, the body responding in an orderly way to the nystagmus produced, whereas in cerebellar abscess or tumor there is a marked disorder in the motions of the body which accompany the nystagmus. Thus if one produce a nystagmus by turning a normal person to the right with his head erect facing to the front, he will fall to the right; if his head be turned 90° to the left, he will fall forward and so on, showing that the nystagmus is produced in the plane of the particular semi-circular canal which is placed in positon to be stimulated by the rotation of the chair, and the direction of falling corresponds thereto. If the vestibulo-cerebellar tract has been interfered with, for instance in cerebellar abscess or tumor, the direction of falling has nothing to do with the position of the head, falling always in the same direction. This is a valuable aid in diagnosis. Bárány showed that an interference with the cortex of the cerebellar substance will produce an abnormal innervation for the pointing movements of the extremities. Normally a person in whom nystagmus has been produced to the left, will, upon closing the eyes and endeavoring to point to some near object whose location has been previously determined before closing the eyes, point considerably to the right of it. In disease in the right cerebellar cortex, the right finger will point directly at the aforesaid object regardless of the vestibular irritation, while at the same time in the same person, the opposite side with intact cerebellum will be influenced by the induced nystagmus.

Nystagmus is often found in multiple sclerosis, in Friedrich's ataxia, syringo-myelia, and in the neurotic and hysterical, but here the differential diagnosis presents no particular difficulties and will need no further comment than a passing mention.

Given, therefore, an undoubted diagnosis of acute labyrinthitis, what, in the interest of the patient, is to be our course of procedure? Plainly, all cases are not operative and the trend is towards conservatism. The advent of serous labyrinthitis calls for the appropriate mastoid operation, possibly the simple, probably the radical, following which the patient is closely watched for subsequent manifestations, testing the functions of the internal ear frequently.

Cases with labyrinthine symptoms following acute mastoiditis or an acute exacerbation of a chronic process should be at once put to bed after the eradication of the primary foci and kept absolutely quiet. This treatment shows a lower mortality record than the former custom of treating them in many instances as ambulatory cases. Absolute rest in bed must be rigidly enforced.

During this period meningeal symptoms must be diligently watched for, according to Kopetzky, and at the first sign of their onset the labyrinth operation performed. This practically coincides with the views of Ruttin that although the unfavorable course may not be checked in the vast majority of cases, nevertheless the timely operation has proved successful in not a few instances even in cases so far advanced as to exhibit turbulent and even purulent fluid upon spinal puncture. Jansen does not always await meningeal symptoms. He holds that the caloric reaction has often not disappeared at the precise time when the surgeon would have the favorable opportunity of staying the process by surgical interference. However, there are few authors at the present time who will advocate operating on a labyrinth whose functions are not absolutely destroyed. Later developments may modify this view.

Circumscribed labyrinthitis is to be treated by expectant measures. The contra-indications to operative opening of the internal ear in these cases are based upon the fact, shown by pathological anatomy and proved by clinical observation, that in a large per cent of such cases where the process is limited to segments of the internal ear, protective barriers are thrown out to limit further advance of the infective agent; thus permitting spontaneous healing. Surgical interference here would be not only unnecessary but absolutely unjustifiable and dangerous.

Sinusitis Frontalis Acuta and Iridocyclitis Acuta. E. KELLNER, *Monatschr. f. Ohrenh.*, Heft 2, 1913, p. 237.

Case of acute suppuration of the left frontal sinus accompanied by iridocyclitis of the corresponding side. Two days later suppuration in right frontal sinus with right-sided iridocyclitis. Cure after five weeks. Kellner emphasizes the necessity for a combined ocular and nasal therapy.

ED.

Prevention of Deafness. W. SCHEPPEGRELL, *New Orleans Med and Surg. Jour.*, Oct., 1912.

Normal hearing, like other valuable gifts, is rarely appreciated until it is lost. In advanced cases of deafness, it is not only a great disadvantage, barring the subject from many vocations and enjoyments, but is also the cause of much unhappiness from a social standpoint. Every safeguard should, therefore, be placed around this valuable sense, and not only should early symptoms of ear diseases be given careful attention, but also affections of the nose and throat on account of their influence on the organ of hearing. When this shall have been done, it will not be many years before the present large ratio of defective hearing shall have been materially reduced.

A. A.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular Meeting, January 22, 1913.

John F. McCoy, Chairman.

(Continued from page 719).

DISCUSSION OF DR. DOUGLASS' PAPER.

Dr. Douglass said that he fully recognized the danger of presenting before this section any cases of cured malignancy, and that he had anticipated the very criticism that he had received, and since the cases had been so thoroughly discussed he would be willing to substitute the term "apparent cure" until time disproved or justified his first claim.

He had never before dared to present a case of sarcoma of the nose even as "apparently cured," but in this case he really felt confident of a successful issue, and with a due consideration of all the hopelessness about these malignant cases he feels justified in maintaining an optimistic position, and believes that we are going to succeed in curing these cases bye and bye. The younger men will do it.

1. Tumor of the Larynx. 2. Falsetto Voice. By Dr. Glogau.

Case 1: Dr. Glogau said that he hardly felt justified in making a diagnosis in this case, but simply presented it as a tumor of the larynx. The man had been operated upon over twenty years ago by Prof. Krause of Berlin, who said that it was analogous to the tumor removed from the vocal cord of the Emperor Frederick. Dr. Geitman saw the patient some time ago, when the patient was almost unable to speak. The tumor apparently the size of a cherry, is situated at the anterior commissure right beneath the epiglottis. It looks very vascular, bleeds easily at the touch of the probe. Indirect laryngoscopy, pharyngoscopy and also Bruening's direct laryngoscopy have been tried. The tongue is very fleshy and the epiglottis is way back so that it is almost impossible to bring the anterior commissure into view. One could only see the middle of the vocal cords. He had finally persuaded the patient to enter the hospital, and intended to try to remove the tumor by suspension laryngoscopy.

There is some reason to believe that it is a recurrence of a carcinoma, not only from the history but also from the appearance of the tumor, the fact that it bleeds so easily upon being touched, and its apparent extension upon the interior of the larynx. He had presented the case as being of interest before trying to operate by suspension laryngoscopy, as it will probably be the first case of this kind operated in that way.

Case 2: Young man, 20 years of age, when he first came under observation about one month ago he could only speak with a falsetto voice. Two and a half years ago his tonsils were removed and he lost his normal voice immediately after the operation, and this condition persisted until his present treatment. He has been placed under the care of a teacher for vocal gymnastics, and has improved most wonderfully. There are not many such cases on record. Dr. Faulkner of Pittsburgh is writing a book on the tonsils and the voice. Dr. Glogau said that he had read of several such cases in literature.

One has to be especially careful in advising tonsillectomy in the cases of singers, and if there is subsequently a falsetto voice or some other change of voice, they may be benefitted by these vocal gymnastics.

DISCUSSION.

Dr. Quinlan asked if this young man was not about the age when the voice is expected to change anyhow?

Dr. Glogau replied that the condition immediately followed the tonsilectomy and had lasted for three years, and had only improved since the voice-training had been instituted.

Dr. Smith said that he did not believe that the tumor was malignant, that if it was so it probably was malignant some twenty years ago when it was first removed, and at that time the patient would have been somewhat young to have warranted a malignant growth, though this is not a positive argument against it. A malignant pedunculated tumor is seldom seen, as he knew there were only three cases on record, one recorded by Fraenkel, one by Ballenger, and the other by Levy. The growth had all the characteristic appearances of an angio-fibroma. The location of the growth argued against the malignancy. He said that if the tumor had been malignant over such a long period of time more inroads upon the general health of the patient would have been made, although there have been cases on record which have gone for eight and even ten years without the necessity for major operative procedures. He thought that if the growth was malignant there would have been greater extension of its base to the tissues adjacent, and in this case the growth seemed to be attached distinctly to the border-line of the cord. As for the removal of the tonsils affecting the voice he believed that their removal generally favored improvement rather than otherwise, and that in young singers he had never hesitated to remove the tonsils, providing the existing conditions warranted their removal. He said that in old singers who had accustomed themselves to singing with the presence of enlarged or diseased tonsils he thought the matter should be considered very seriously before removing them. In the case presented by Dr. Glogau he believed there was some psychic factor existing for the condition of the voice, rather than that the removal of the tonsils influenced it.

Dr. Smith inquired whether it was not the anterior part of the larynx which it was most difficult to reach by suspension laryngoscopy. That in the article published by Killian, and that read by Freudenthal before the section, the posterior parts of the larynx were mentioned as the easiest to reach, and that the anterior part and anterior commissure was with difficulty brought into view.

Dr. Sidney Yankauer said that in cases which present unusual difficulties suspension laryngoscopy had proved very efficient. They had done several operations on cases with complete stenosis and the arytenoid cartilage adherent to the epiglottis, and it was impossible to bring it into view, even under a general anesthetic; but with the suspension laryngoscopy, a probe had been passed, and by stretching and dilatation with a good sized dilator it had proved easy to examine and manipulate the case. The ease with which the parts can be brought into view by means of the suspension laryngoscopy is very remarkable and surprising to any one who has not seen it.

Dr. Yankauer said that it was certainly true that the anterior commissure was more difficult to observe than the posterior parts, and that was true with every method. Suspension laryngoscopy was nothing more than an automatic holder for the laryngoscope—the principle is precisely the same. The anterior commissure can be brought into view more easily, however, by suspension laryngoscopy than with direct laryngoscopy, because one can have more pressure; one has the whole weight of the patient's head, and perhaps of the chest, to press the larynx down, and the finger can be placed in and force it around, so that one can get a better view.

Dr. MacKenty said that he had seen several cases of suspension laryngoscopy in Vienna during the past summer, with Marschik. He did not think suspension laryngoscopy gave as good a view of the anterior commissure as the bronchoscope, so that he was more or less disappointed in the result; at that time he had been using it all summer and thought that the instrument would have to be modified before it proved to be of great practical service.

Dr. Macpherson said that he had seen this case several years before, and now the growth was much more pedunculated. It was a case of subglottic tumor. He had never considered it to be a malignant tumor, and would certainly not have said that it was like the Emperor Frederick's case.

Dr. Lederman said that he had a rather hurried examination of the patient's throat, and it seemed to him to be a benign tumor of the angioma variety. Whenever the patient tries to speak he forces the growth up between the cords and the latter cannot get together. There did not seem to be an infiltration. At one time he caught sight of a mass of growth below the cords.

Dr. Glogau said that the fact that it was apparently pedunculated and had no apparent infiltration does not disprove malignancy. He recalled a similar case which he had seen some time since and which turned out to be malignant. Dr. Smith himself had said that a malign growth might remain for years in the same state without involving other structures. In the case of the boy he too first thought that it might be a natural change of voice, but it came so suddenly and followed immediately the removal of the tonsils and lasted until three weeks ago when he was put under vocal training, that it did not seem to be due to some psychic condition. But in any event, if such a change of voice should occur after a tonsillectomy or tonsillotomy it would seem to be well worth while to try the vocal training which had done so much in this instance.

Report of a Case of Phlegmon of the Epiglottis. DR. M. D. LEDERMAN.

(*To be published in a subsequent issue of* THE LARYNGOSCOPE.)

DR. GLOGAU asked if there was any history of foreign body, and received an answer in the negative. He then cited a somewhat similar case, caused by a foreign body.

Removal of Foreign Body from Left Bronchus. Removal of Foreign Body from Esophagus. Removal of Foreign Substance from Both Bronchi. DR. SIDNEY YANKAUER.

The first specimen was removed from the left bronchus of a boy of 5 years, who gave the following history: For four weeks he had had a cough with profuse expectoration and intermittent fever. Examination showed physical signs of consolidation and effusion on the left side; he had an evening temperature of 104° which came down in the morning. He remained in the hospital for a week, during which time the acute symptoms disappeared, but the physical signs did not clear up. A radiograph was taken and showed the presence of a foreign body on the left side, outside the mammary line. The parents were sent for, and upon questioning gave the history of the inhalation of a foreign body some five weeks previously. They had sent for a doctor but he thought it had passed down into the stomach and they had given the matter no further attention. This was the second case in which a foreign body was discovered without any previous history. In this case it happened that the substance was of a nature to give a dense shadow; in the other case it was a soft bone and gave no shadow.

On passing the bronchoscope the left bronchus was found filled with granulation tissue. After working around, a good deal of pus was expelled and the foreign body was seen and removed. The boy made a good recovery in about a week.

The second case had a somewhat similar history. The child was 2 years of age and was eating walnuts; he ran across the floor and fell; he began to cough and became cyanotic. A doctor was sent for who thought he was suffering from diphtheria and gave antitoxin. The cyanosis disappeared, but the attacks of coughing continued, and the cyanosis returned several times a day. After two weeks these attacks became so bad that the cyanosis was accompanied by convulsions. A laryngologist was then consulted who referred the case to Dr. Yankauer. The patient was anesthetized and the instrument passed, but the trachea was so swollen that it was difficult to pass a small tube, but this was eventually successful, and several small pieces of walnut meat were found and removed. From previous cases of this kind it was suspected that there might be other pieces which had escaped observation. The examination was difficult as there was a great deal of swelling, but eventually with the aid of cocain and adrenalin the left bronchus was thoroughly cleaned out and the child made a good recovery.

In the case of the foreign body removed from the esophagus, the patient gave a history of eating chicken and suddenly feeling something solid in his mouth, which slipped down his throat. He immediately began to gag and vomit. He went outside and while bending over a basin his teeth dropped out and disappeared. Eventually, as he thought, the piece of bone went lower down in his throat and stuck, and he had a good deal of pain and was unable to swallow. In brief, the history was that of swallowing a piece of bone while eating. On introducing a short esophagoscope, the obstruction was seen way down to the narrowing of the esophagus, but with a longer instrument some twelve or fourteen inches from the teeth a glistening white particle was found. This was grasped with the forceps and withdrawn with the esophagoscope as far as the cricoid when it slipped back. The esophagoscope was again introduced and the same thing occurred a second and a third time. Then the esophagoscope was again introduced and the foreign body seized by the bulb portion and brought up to the cricoid region, but even then it could not be brought out. There was a good clutch on the body, however, and by holding it firmly against the contracted muscle and overcoming the spasm, it was finally brought out. It proved to be a part of the tooth-plate, which had evidently been cracked off while he was eating. After removing the foreign body the patient was put to bed for twenty-four hours, after which the pain and swelling disappeared and he went home.

DISCUSSION.

Dr. Smith said that he wished to congratulate Dr. Yankauer upon the success of his work. He would also like to know where Dr. Yankauer was able to secure so many and such a wide variety of cases. He said in his hospital there had been comparatively few foreign-body cases and that the most of them were successfully removed. He said that in one of his own cases of foreign-body in the esophagus, the five-cent piece which was swallowed continued to precede the operative measures. That when the case was brought to the hospital the x-ray showed the coin to be in the upper part of the esophagus. He examined the esophagus first with a short instrument, and then with one sufficiently long to go into the stomach, but could find no evidence of the body. The second picture showed the coin to be in the small intestine and the third in the rectum. The fourth picture was unnecessary. Dr. Smith said that it was a well-known fact that the meat of a nut created more disturbance than any other foreign body, particularly that of the peanut. That there was great liability to pneumonia in these cases, and that Dr. Yankauer's method of evacuating the lower part of the bronchi by suction was one to be commended.

Dr. MacKenty said that the cases reported by Dr. Yankauer were certainly most interesting. He then told of an instrument in his possession intended for cutting in two a false tooth or other foreign body which will not come through. It was very small but a very strong cutting instrument, and he hoped some time to have a false tooth case upon which to prove its merits.

Dr. Miller inquired whether any other means of removing the foreign body had been tried before the bronchoscope. On being informed that no means had been employed, he said he had removed a wishbone after three weeks' lodgment in the right bronchus of a boy, by simply placing him head downward with percussion on the back. The entire side of a wishbone was extracted by placing one fist over the boy's back and hitting it a sharp blow with the other fist, the first hand being placed as nearly as possible over the location of the retained bone. The boy's body was brought over the side of the bed with arms and head touching the floor. This was three weeks after the bone was swallowed while eating a piece of the breast of chicken during the telling of a joke by his brother. A shoe-button and a ring, which could not be seen, were dislodged by hanging the patients by their knees over the end of a brass bedstead and when they had drawn a full inhalation, a sharp blow was given the fist placed over the chest at the site of the bone, by the other fist. The button came as if it had been shot out of the patient, who was 7 years old, and had put the button which pulled off while attempting to polish his shoes, in his mouth, and had accidentally swallowed it. The child of 4 had swallowed a ring, which had fallen to the floor under a rocker and had been crushed out of shape. The mother tried to make him spit it out, but he tried to release it and in the frantic struggles of the mother it disappeared down below the point of feeling for it. In this case, three sharp blows on the sternum, and a sudden pull on the tongue dislodged it. These remarks in no way should deter anyone from using the bronchoscope so skillfully as doctors you know can, but we should give simple measures a chance.

Dr. Quinlan told of two instances in which he had removed the shell of a peanut from the bronchi by similar means as those described by Dr. Miller, by slapping the patients on the back and chest. The old-time ready-to-hand methods will often serve effectively. A few days previously he had seen a boy who had swallowed a small stopper which irritated his throat, but which was removed with an applicator.

Dr. Yankauer, however, had certainly done most excellent work for which he deserved a great deal of credit.

Dr. Smyth cited the case of a child of 3½ years, who seemed to have the foreign-body habit. The little girl had previously swallowed and retained for varying lengths of time, an intact grape, olive-stone, and shoe-button. Her last effort had been a penny, swallowed seven months before and located by the x-ray in the esophagus opposite the sixth dorsal vertebra. A Jackson tube was introduced, but before the penny had been located the light went out and could not be renewed, and then the foreign body was quickly and easily removed with the coin-catcher. The tube was the approved method, but the coin-catcher was simple and satisfactory.

Dr. Yankauer, in closing the discussion, said that in one of these cases the foreign body cast no shadow. In the other case there was a great deal of swelling around the foreign body and there was no time for delay. He thought that while such methods as those described by Dr. Miller and Dr. Quinlan would be quite proper at the time of occurrence, that where they have not proved effective there was no question about the value of the bronchoscope.

Demonstration of a Combination Pressure and Air Pump. Dr. Sidney Yankauer.

DISCUSSION.

Dr. Miller said that the instrument had been very greatly improved since he first saw it. The idea at first was to wash out the tonsils.

but this was finally given up as impractical. First, he tried the usual dentist basin suction syphon, but that not being strong enough, he tried circulation of medicated solutions through a continuous double flow by a reservoir placed six feet above the patient. He also had the opportunity of trying a pneumatic electric carpet-cleaner, whose suction, however, was too strong. About this time it became necessary to try some operatic voices with sprays but found none continuous or strong enough until he explained his idea to Mr. Sorensen, who created a very small, yet reliable, electric pump with double cylinders, which was not only continuous but was able to produce just the right suction for tonsil and mouth moistening as a relief and cure for tonsillar disease. This machine was carried to Philadelphia for exhibition at the American Triological Society, May 13, 1913. It is so light in weight and small in size that I called it "The Midget," a suggestion that Mr. Sorensen was kind enough to apply to this beautiful, yet practical mechanism. It is in nowise like the Wappler pump, not but what the Wappler is good. I congratulate Dr. Yankauer for giving it the needed boost it deserves.

Regular Meeting, February 26. 1913.

Presentation of a Tonsillolith. - Dr. Rene H. Huvelle.

Male, aged 55, consulted me for a sore throat which had existed for five days. Fifteen years ago he had had a similar sore throat, otherwise had always been in good health. No gouty or rheumatic history. Examination showed edema of right tonsillar area and soft palate, bulging of right lateral pharyngeal wall, and large, suppurating glands on same side of neck. Puncture of the pharyngeal abscess evacuated about ten ounces of pus. Next morning, the edema of the right tonsillar area persisted, but the pharyngeal abscess had somewhat subsided. Patient, in addition, complained of "hot piece of steel at root of tongue" on right side. Palpation revealed no hard mass. Several suppurating glands on the side of the neck were removed the same day. The next morning, while gargling, the patient felt a sudden sharp and severe pain, followed by a loose mass in the mouth, which he thought was a tooth. This mass was saved by the head nurse for examination. Immediately after this, the patient was able to swallow without pain. The site of exit of the stone was at the junction of the right anterior tonsillar pillar and root of tongue; it was easily seen and probed. The stone was not chemically examined. It weighed 11 grains, was 20 mm. in length by 6 to 9 mm. wide, and 4 to 6 mm. thick.

DISCUSSION.

Dr. Quinlan asked if he had understood correctly that several glands had been removed from the neck, and upon receiving a reply in the affirmative said that in an ordinary case of quinsy these are not usually suppurative glands in the neck, and he thought the removal of such glands was unnecessary at such a time, as it produced unnecessary annoyance to the patient and would leave an open wound which was liable to subsequent infection.

Dr. Huvalle replied that the gland-wounds were practically healed in three or four days without any infection and they were removed because they were suppurating.

Some Observations on the Voice Before and After Surgical Procedure.

Dr. Frank E. Miller.

DISCUSSION.

Dr. William Kelly Simpson: The discussion of this subject permits of its being approached from at least two viewpoints. First, from a more intimate and technical standpoint, wherein are considered not only the general relation of muscular action in the control of voice sounds, but also the closer relationship of certain muscles, groups of muscles, and resonance cavities in their special jurisdiction over vowels, consonants, and their various combinations. In fact, we may say that the study of voice-production is, to a great extent a study of muscular action, and those whose vocation it is to teach voice-production, must have these anatomical combinations at their command.

I always recall with amusement the ignorance displayed in this respect by a certain teacher of singing who, in looking down the mouth of a pupil who was somewhat hoarse, said:. "Ah, yes; I see that your vocal cords are somewhat congested this morning." How easy!

The study of voice-production, or its correction, hardly comes within the domain of laryngology. It is a study in itself, yet the laryngologist must stand guard over the physical well-being of the voice, going far beyond the mere mechanics and local conditions. His is no restricted area. Voice hygiene and general systemic conditions must alike be duly considered by him.

And this brings me to the second point of view of the discussion, viz., the relation of surgical operations in the upper respiratory tract to the improvement of voice-conditions. This is a subject of great magnitude and concern. It is the phase of the discussion which concerns most of us as practical laryngologists. I cannot enter into a minute discussion of operations on isolated areas and their effect on voice-correction. The relation of surgical operations to voice-improvement may be viewed in two ways. First, in those persons who have decided imperfections in voice due to some pathological condition. This may be found in the larynx itself, from the numberless conditions arising there which interfere with the voice; or we may have the various mechanical obstructions or hindrances to good vocal production, as seen by enlargement of the lingual or faucial tonsils and the adenoid tissue in the naso-pharynx, cleft palate, or in some marked intra-nasal condition, as seen in nasal polypi, unusual hypertrophy of the nasal mucous membrane, or markedly deviated septa. It goes without saying that removal of these conditions will have its effect in voice restoration and often without any further training as far as ordinary voice is concerned.

But when we are called upon to improve the true qualities of the *singing* voice by surgical interference, unless these morbid conditions exist it is, I should think, a matter in which we should be very careful in promising too much improvement, for we must remember that the perfection of the singing voice necessitates more than the mere mechanical ability to sing. There must also be a musical intelligence possessed by the singer, a knowledge of the proper breathing, proper use of the singing mechanism, and musical interpretation as well. It is, indeed, difficult to produce a singing voice unless one already exists. Sometimes our efforts in surgical interference may produce an opposite effect from the one desired. This, I think, may be seen in some of the resulting adhesions and deformities following too rigorous attempts in tonsillectomy; and when this operation is performed on the person of a singer, great care and caution should be exercised in its performance. I am not in any way deprecating any attempts in preserving or improving the singing voice, but rather welcome any effort in that direction. Neither the laryngologist nor the vocal instructor can work alone; they must supplement each other and each should acquaint himself a little beyond his specialty. Keeping the singing voice in order is one of the first problems alike of the laryngologist and the vocal teacher, and each should yield to the other in those points which do not come within his immediate domain.

Dr. W. S. Bryant said that Dr. Miller was very much in earnest in his endeavor to bring order out of chaos and put our ideas in regard to voice production on a scientific base. As he understood Dr. Miller's scheme, the various resonators were divided into groups, beginning in the nose and ending with the floor of the pelvis. These resonators are called autonomies, whatever that may mean. The theory is that certain organs act as resonators independently of all others. They are supplied by special nerves and muscles and act independently of the other resonators. This seems reasonable and removes much of the clouds which hang about the mechanics of voice production, and is a great step forward in the scientific understanding of the subject.

Dr. Chambers said that certainly the young lady who had just sung so beautifully owed much to Dr. Mitchell, and that many persons would be almost willing to wear an artificial palate if it would enable them to do as well.

He was very glad to hear Dr. Miller speak of the function of the tonsil and of its capsule. Tonsillectomy is the fad for the moment. In the exuberance of their enthusiasm some operators remove tonsils which had better been unremoved.

Dr. Harmon Smith said that just as he was entering the room, Dr. Miller had referred to the fact that the patient who had just been presented had been a patient of his, and that an operation had been performed upon the middle turbinate. He wished to correct the impression as to the nature of the operation, as he had performed a submucous resection and had not touched the middle turbinated structure at all, that there had been considerable vaso-motor rhinitis subsequent to the operation, and that he had endeavored to reduce this condition by palliative treatment, feeling convinced that subsequently ample room would be afforded for respiration after correction of the nasal deformity, but that the patient had been irregular in his attendance and had finally discontinued his visits altogether.

Dr. Smith said that he was absolutely opposed to the indiscriminate removal of any of the mucous membrane from the nasal cavities and that he held inviolate the turbinate structures as long as there was any hope of reducing them by other than surgical means.

(To be continued.)

PHILADELPHIA LARYNGOLOGICAL SOCIETY.

Regular Meeting, November 19, 1912.

DR. ROSS HALL SKELLERN, CHAIRMAN.

The Eustachian Tube in Chronic Aural Suppurations. DR. SIDNEY YANKAUER.

The performance of any operation with the highest degree of skill demands an excellent technic and a knowledge of the anatomy, not only as it is given in text-books but also as we see it in the living patient.

Technical skill is not so much a matter of the sense of touch (although an operation, such as I am going to describe to-night, is performed by what is called the sense of touch) as it is a matter of muscular sensation in the muscles of the fore-arm and hand, and as these muscles are developed differently in each individual, the muscular sense cannot be described. For this reason I have brought with me an anatomical specimen of the ear upon which I shall perform the operation.

In text-books the Eustachian tube is described as consisting of a cartilaginous and a bony portion, but from an anatomical, histological and clinical standpoint the cartilaginous portion belongs to the nasopharynx and bony portion to the middle ear.

The sharp transition between the floor of the bony tube and the floor of the middle ear largely disappears when the anatomical specimen is viewed in the normal position. For this reason I have suggested that the bony portion of the tube should be called the pre-tympanum to correspond to the epi-tympanum and the hypo-tympanum (illustrated on the blackboard).

It has been shown by Siebermann, Bondy, Heath and others, that a limited number of cases of chronic aural suppuration can be cured by conservative-radical operation, which aims to restore the middle ear to a normal condition, and which must be considered successful only when it is followed by closure of the perforation in the drum membrane; for if the drum membrane remains open, a discharge from the ear will invariably persist or recur from time to time. When the Eustachian tube is open, perforation of the drum facilitates the passage of air from the nose into the ear during swallowing, blowing the nose, sneezing, coughing, etc. When the drum membrane is closed it is very difficult to blow particles of mucus into the ear, or even to inject fluids into the ear for therapeutic purposes by blowing them through a catheter. It is the drum membrane which protects the middle ear from infection from the nasopharynx. Therefore, in all cases of chronic suppuration in which restoration of the drum membrane is impossible, the Eustachian tube must be closed. This fact has long been recognized by otologists, and a radical operation is not considered complete, nor will it be successful except in a minority of cases, unless the Eustachian tube is closed.

What the speaker has done has been to devise an instrument by which the Eustachian tube can be closed without performing the radical operation, believing that thereby a considerable percentage of cases will be cured, and his experience with the closure of the tube in this manner during the past six years has been that sixty per cent of all cases, as they present themselves in practice, are permanently cured by this method. The fact that only sixty per cent are cured does not limit the indication for this operation to those cases in which it might be expected to accomplish a cure, for, even if it is known that the radical operation must subsequently be done, if the Eustachian tube has previously been closed, the infection of the ear will be diminished and the radical operation-wound will heal more kindly. If this were an operation which required a general anesthesia, and was followed by a period of rest in bed, one would hesitate, perhaps, to advise it in cases which seemed to be unsuitable for it, but as it is performed painlessly under local anesthesia and without unpleasant after-effects, it is justifiable in all cases.

The healing of any suppurative process requires the removal of the infectious agent, the bacteria, and the removal of the products of disease, the dead tissue, and the secretions. Moreover, the return of the bacteria must be prevented permanently, and the removal of the diseased products must be made continuous by perfect drainage. As the original source of infection in aural suppuration is the naso-pharynx, and as this region cannot be kept permanently free from infectious agencies, the closure of the Eustachian tube is indispensable for the prevention of re-infection.

The fact that a certain number of cases of chronic suppuration heal spontaneously, is evidence that efficient drainage can be established by nature, and the fact that cases spontaneously healed almost invariably show a sclerosis of the mastoid bone, and that in many of them the ossicles have disappeared, proves that spontaneous healing occurs even when the bone has been profoundly diseased. By a study of these cases we obtain our indications for the conservative treatment of the disease. Cases in which the amount of disease in the middle ear and mastoid cells is slight, get well quickest after closing the Eustachian tube. Cases in which the drainage from the middle ear and mastoid cells is inefficient will never get well until such drainage is established by surgical interference. In my own cases the time required to establish healing after closing the tube has varied from a few weeks to eighteen months; the average of all cases being six months.

The anesthesia for the operation is produced by making an application of 20 per cent cocain, containing a little adrenalin, to the middle-ear cavity and to the pre-tympanum by means of the ordinary applicators. The pharyngeal side of the isthmus must also be anesthetized by applying the same solution by means of the Eustachian applicator through the catheter.

Closure of the tube is not always accomplished after the first curettement. The reasons for such failures are: first, inefficient curettement; second, adhensions of various kinds in the middle ear (diagrams made on blackboard); third, suppuration within the canal for the tensor tympani muscle. The canal can be opened and the muscles scraped out by means of the same curette.

It is sometimes necessary to remove the ossicles to obtain healing. The indications for ossiculectomy are necrosis of the ossicles, necrosis of the outer attic wall, polypi originating in the attic, and the removal of the adhesions referred to previously. After organic atresia of the Eustachian tube has been established the ear is entirely independent of any changes, acute or chronic, which may take place in the naso-pharynx. The cure of the middle-ear suppuration has been unaffected by the attacks of acute rhinitis, acute suppuration of the accessory sinuses, ozena, nasal-polypi, etc.

The after-treatment is the same as the usual conservative treatment of middle-ear suppuration. When organic atresia of the isthmus has been successfully accomplished certain important changes of atrophic nature take place in the middle ear. Granulation tissue shrinks rapidly and polypi lose their tendency to recur, adhesions which have been cut do not unite again, the inner tympanic wall becomes pale, dry and leathery in appearance, and the perforation of the drum membrane never becomes smaller, but on the contrary, grows larger, so that after a few months all that is left of the drum membrane is a narrow white band attached in the annulus tympanicus. (Demonstration of operation on anatomical specimen.)

DISCUSSION.

M. B. GLEASON: Dr. Yankauer has demonstrated a method of closing the Eustachian tube which is probably feasible and safe in the majority of instances, but the proximity of the carotid should be borne in mind. In cases where I have inadvertently torn the lateral sinus, the rent has been caused by a spicula of bone and not an instrument. It would seem that when the artery was weakened, as the result of syphilis, or when the bone was necrosed or simply thin and fragile that there would be danger of wounding the carotid by this method of operating.

It is a well-known fact that within the nose, synechia occurs from simple contact of inflammed and swollen mucous surfaces. Probably the epithelioma disappears by pressure necrosis under such circumstances and the granulating surfaces then fuse together. The same thing sometimes occurs within the tympanum and probably also within the Eustachian tube, judging by the frequency of strictures seen in anatomical specimens when the drum had been destroyed by disease. When Neumann was demonstrating his method of performing the radical mastoid operation in Philadelphia a few years ago, I asked him what he did when he failed to close the tube. He answered that he first tried strong solutions of silver nitrate and that often this procedure was successful.

I should like to ask Dr. Yankauer if after the closure of the tube, the median wall of the tympanum finally became, as it is sometimes called "epidermized" with consequent great impairment of hearing, as after the radical mastoid operation.

DR. GEO. W. MACKENZIE: We have listened to Dr. Yankauer's able talk and demonstration on "The Management of the Eustachian Tube in Chronic Aural Suppuration." Those of us who have heard both Mr. Heath last summer at Boston, and Dr. Yankauer here to-night cannot help but compare the attitude of these two authorities on the subject of chronic aural suppuration. On the one hand Mr. Heath claims to be able to cure practically all cases of chronic middle-ear suppuration by the route of the mastoid antrum, and with excellent results as to hearing, on the other hand, Dr. Yankauer modestly claims to be able to cure a fair percentage by the opposite route, i. e. through the Eustachian tube.

At the meeting of the International Otological Congress no one appeared to have been able to get Mr. Heath to commit himself definitely on anything, especially on the indication for his operation; while to-night, Dr. Yankauer in a concise and definite manner has pointed out to us the etiology and pathology of the factors which make for chronicity in cases of middle-ear suppuration.

It is my belief that there is a definite place for each of these operations, the choice of which depends upon the diagnosis, and only that diagnosis, which comprehends every feature of the suppuration, i. e. the location and character of the complication, or complications which tend to make the suppuration chronic.

I believe that Dr. Yankauer has hit upon an excellent idea for the treatment of a great class of chronic suppurations, and deserves every possible credit for his masterly efforts. I should like to ask Dr. Yankauer if, in those cases of closure of the Eustachian tube with new-formed membrane, he would advise his method of operation. It is in these cases that we not infrequently find associated cholesteatoma. I should also like to ask Dr. Yankauer if he has ever tried infiltration-anesthesia of the osseous external canal, as practiced successfully by Neumann and others since, in operations upon the middle-ear, notably ossiculectomy.

Since having been instrumental in bringing Dr. Yankauer here I wish to thank him personally for his coming, and for his very able and instructive discourse.

Dr. Geo. M. Coates: I have been much interested in the work of Dr. Yankauer on the Eustachian tube, and have listened to his paper with much profit. We all know that a radical mastoid operation will fail of complete success in giving the patient a dry ear if the Eustachian tube remains patent, and therefore we endeavor to close it permanently at the time of the operation, sometimes successfully, and sometimes with partial or complete failure. In these cases the Yankauer operation gives us a chance to complete the cure at a later date. Following the same line of study it is evident that many of our cases of chronic suppurative otitis media, where there is not too much caries and where the mastoid is not seriously involved, may be cured by closure of the tube without resorting to the radical operation, and this is a condition very much to be desired. I have not used the Yankauer instruments, but with improvised ones have a number of times succeeded in effecting a permanent closure of the tube, and a cure of the middle-ear disease. At any rate, the Eustachian tube is of very little, if any, value where the membrana tympani has a large perforation, its only function being then that of an accessory aid to drainage. The hearing of these cases, in my experience, may be improved by operation, but is frequently made worse. A dry ear has frequently less hearing power than when it was discharging freely.

Replying to Dr. Gleason Dr. Coates said: We obtain a dry canal with perfectly leathery appearance. Owing to its toughness and elasticity it would be difficult to injure the carotid artery, even though the canal be necrosed. No accidents have occurred in any of my cases. Dr. Allport uses a burr and engine and has never known an injury to the artery.

Hearing is tested only by speech prior to operation, after thorough cleansing and drying, and after operation. At this time little change in hearing—no diminution. In two cases, decided improvement, not the result of curetting, but from cutting adhesions of ossicles.

When drum membrane was perforated for many years, adhesion of ossicles and sound conveyed by bone and round window, and when latter obstructed by adhesions, no low notes.

Reaction following operation—swelling, discharge from ear, first thin and then muco-purulent, finally watery mucus. After weeks secretions usually disappear.

All cases had been under treatment at our own or other clinics for years. In one case of oral polyps after clearing and closing, tube became dry and has so remained. No matter what the nasal condition, colds, influenza, polyps, etc., once the tube is closed, the ear never becomes involved. They do not get immediately well—average time six months; one case not until a year longer; time depends on condition of drainage and extent of disease. If small portion of middle ear is diseased—cure rapid; if necrosis of ossicles,—then longer; if necrosis of mastoid and sequestrae,—never cured until radical mastoid operation.

Help nature by ossiculectomy, remove outer wall to favor drainage, then open antrum through external canal.

In answer to Dr. Mackenzie's question: I have never tried the infiltration anesthesia.

Submucous Resection of the Nasal Septum with Report of One Hundred Cases. Horace T. Aynesworth, *Jour. Ophthal. and Oto-Laryngol.*, Feb., 1913.

The results obtained as to nasal breathing were good in every one of the series, with one or two exceptions. The tonsils and adenoids are removed subsequently if necessarily.

The tendency to catch cold was improved or done away with, as a rule. Ear affections were favorably influenced. Six cases of tuberculosis and suspects in incipient stage were operated with decided benefit in each one. Two epileptic cases were greatly benefited, the third one since died in a paroxysm.

The majority of cases having associated stomach trouble experienced relief. Stein.

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ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

BRIEF CONSIDERATION OF CERTAIN RECENT VIEWS REGARDING OTOSCLEROSIS.*

DR. THOMAS HARRIS, NEW YORK CITY.

The study of that form of progressive hard-hearing known under a variety of names but most generally referred to as otosclerosis, is fraught with peculiar and to a large degree, uncontrollable difficulties. The affection is not like that of adenoids, something that can be got at and easily removed for examination. For accurate investigation, the microscopic examination of the temporal bones of those in whom the disease has been diagnosed during life is essential. The obtaining of these is difficult anywhere, as there is nothing *per se* in the disease which is wont to occur in the young, to hasten the death of the person affected, and especially difficult in this country where post-mortem material is so exceedingly hard to secure. An equally essential requirement, possessed by few otologists, is that of being well grounded in pathology. As a result, the total number of cases investigated is not large and these are almost entirely limited to those studied by our German confreres.

It is with no claim to any expert pathologic knowledge that I have presumed to present another paper on this subject, but rather that as a result of some personal study and of an opportunity recently to meet a number of those who have given especial attention to it I wish in a judicial way to weigh and consider briefly the various views which have been advanced regarding the nature of this disease. I am fully aware that in the minds of many of you the subject appears hopeless of solution. Indeed, in one of the best short papers on the subject which has recently appeared, that from the pen of a member of this Society, Dr. Sheppard, the pessimistic view held by certain foreign writers was advanced, i. e., that even the diagnosis of otosclerosis is impossible.

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*Read at the Forty-sixth Annual Meeting of the American Otological Society, Washington, D. C., May 7, 1913.

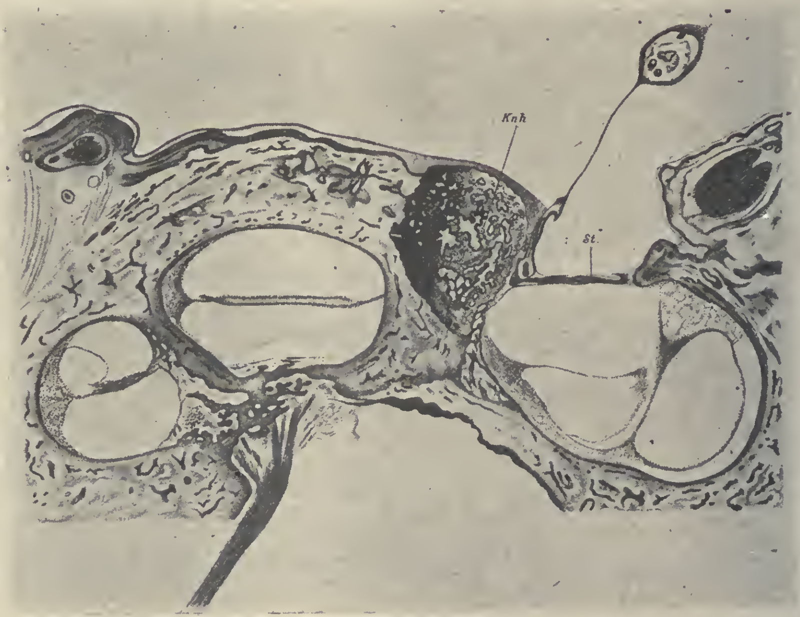

Figure 1—Case 1: Horizontal section through the region of the oval window. A small area of new-formed bone on the anterior border of the oval window. The mass is light in color near the window, darker in color near the cochlea. The last are the recent, the first are the older portions. The mass extends somewhat into the window niche; but does not involve the stapes nor the annular ligament. There is no stapes anchylosis. In the cochlea can be seen atrophy of the organ of Corti, and an atrophy of the connective tissue growth in the spiral ganglion. The atrophy of the acoustic nerve is the result of the tumor which existed in this region. The cochlea, the sacculus and the utriculus are filled with hyalin. (From Manasse's collection with permission.)

For a proper consideration of the subject, a brief reference to its history is necessary. The number of investigators is few, and the total number of cases, microscopically studied, collected by Denker up to 1904, is limited. The term otosclerosis, as you are aware, was first used by Joseph Toynbee, in 1857, in his descriptive catalogue of 1149 specimens, where he describes 126 cases of union of the stapes in the oval window. This term was used for many years to describe such an obstruction to the sound-waves whether of a membraneous or bony nature. But it was not until 1885 that it was demonstrated macroscopically and physically by Bezold that the loss of hearing for low sounds was the result of such rigidity in the oval window. The first microscopic examination of a diseased temporal bone in a case of otosclerosis was made by Katz in 1890. He was followed by Habermann who, in 1892, reported his first case. In 1893, Bezold and Scheibe reported their first case, and in the same year, Politzer, in this country, and if we are not mistaken before this Society, reported sixteen cases, all observed by him during life and studied histologically post-mortem. In 1894, Bezold reported his second case; in 1898, Siebenmann reported four cases. In 1901, Scheibe reported two cases, in the same year Habermann reported a second case, and Katz a second case, while in 1903, Habermann reported ten temporal bones observed in six patients, a total of thirty-four cases. Since then Panse has reported two cases, Joergen Moeller one case, Bruehl five cases, Schilling one case, Otto Mayer one case, and most recently Manasse has described seventeen temporals in ten patients.

The early view in regard to the etiology of the affection was that it proceeded from a disease of the middle ear. This is undoubtedly correct in the cases of Katz, where both from the history and clinical picture, a previous chronic suppuration of the middle ear was evident. In those of Scheibe and of the ten cases of Habermann there is likewise a clear history of middle-ear disease. Politzer was the first one to advance the view, which he still maintains, that the disease is a primary affection of the labyrinthine capsule, originating not in the periosteum but in the bone itself. As a result, new bone-tissue is developed which gradually presses out the old bone and advances to the oval window and the stapes, leading finally to a complete stapes ankylosis. Siebenmann was the first to make a careful study of the affection and he is of the opinion that the spongifying process does not proceed from the periosteum, nor yet does it develop as a primary affection of the bone. From the cases which he studied he is of the opinion that the starting-point is to be found on the border between the labyrinthine capsule, which is primarily developed out of cartilage, and the connective tissue bone (Bindegewebesknochen) secondarily developed from the periosteum, and that the earliest stage of the disease is to be found in a lacunary resorption of the bone by means of the Haversian canals which become dilated into large lymph spaces, although at the same time in other areas there is apposition going on by means of osteoblasts. The spongification in his opinion is the last stage of a growth which does not normally occur in the temporal bone, but is the rule in other bones, and follows here the entire disappearance of the cartilage present in the intercellular spaces and on the border of the oval and round windows and also by the growth of compact bone into the osteoid tissue, and finally into the spongified tissue.

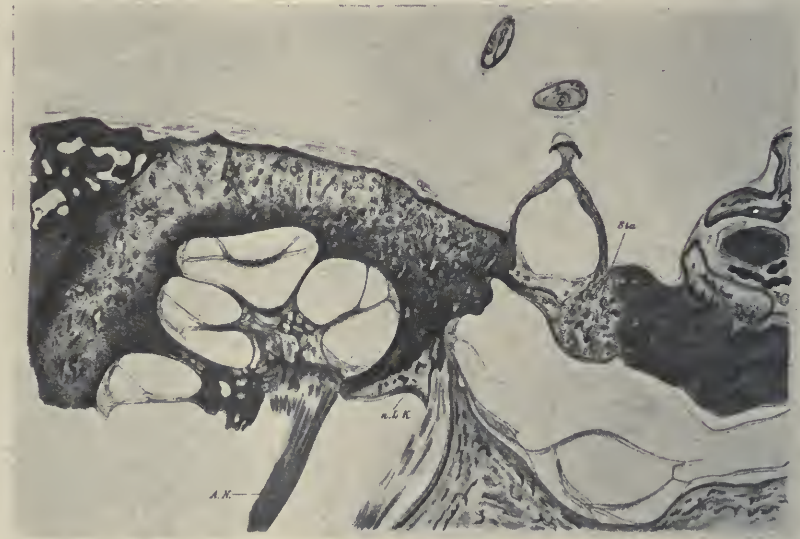

Figure 2—Case 8: Advanced disease of the labyrinthine capsule. Almost the entire bony cochlea is transformed by the osteitic process. Only a small spot shows normal labyrinthine bone, N. L. K. We can see with this weak enlargement that the larger part of the new-formed bone is very old, light in color, poor in blood vessels, and formed out of dense sclerotic bone tissue. Only on the inner periosteum can be seen a few dark-colored recent portions. K. N. H. A small area of new-formed bone. Complete stapes anchylosis, with the foot-plate strongly involved in the new bone-formation, particularly on the posterior border. Degenerative atrophy in the membranous labyrinth, both portions of the acoustic nerve very thin. A. N. c. Atrophic cochlea nerve. A. N. b. Atrophic vestibular nerve. (From Manasse's collection with permission.)

Habermann, who studied the subject with equal care but with specimens derived from patients who had suffered from middle-ear disease, believes that the affection proceeds along the vessels from the middle-ear into the inner-ear. Finally, Denker, as a result of a study of the collected literature as well as personal investigation, in 1904, reached the conclusion that the disease might be in some cases secondary to middle-ear disease, but was usually of a primary nature, and recognized at that time the difficulties which have since presented themselves, due to the variable location in the labyrinthine capsule of the diseased areas. Since Denker's monograph on the subject, the views of many investigators have been materially altered as the result of a masterly study of the subject by Manasse, of Strassburg, entitled, "Die Ostitis chronica metaplastica der menschlichen Labyrinthkapsel." Manasse previously in Basle advanced, but only last year published, this result of his studies in the examination of seventeen temporal bones derived from ten cases, a study extending over twenty years. As in the case of Siebenmann, the contributions of Manasse are particularly important because of the fact that he is a trained pathologist.

The views of Manasse it will be necessary to state somewhat particularly:

1. In the first place, he confirms the observations of Siebenmann and Habermann, that the predilection area for the diseased process is the anterior border of the oval window. This, however, as they have also pointed out, is not always the case. Three times the porus acusticus internus was involved, twice the round window, three times the apex of the cochlea, and once the anterior portion of the labyrinthine capsule and the posterior semi-circular canal.

2. Of particular interest are Manasse's views regarding the histology of this bone affection. He believes that the "disease is virtually a transformation of the labyrinthine capsule. The compact bone is to a greater or less extent replaced by new (foreign) bone substance which is everywhere sharply contrasted with the old bone tissue. The new bone differs in its structure according to the age in which one finds it. The chief difference, as compared with the old bone, is that instead of compact bone, a system of bony trabeculae is to be seen between which there lies a greater or less number of large open spaces. These spaces are composed in the younger parts of a tissue very rich in cells, which in the older parts becomes fibrous and at times is replaced by fat tissue or rarely even by 'Schleimgewebe.' The entire newly-formed tissue would be spoken of in general as *spongifying bone*. Later the open spaces become smaller. They contain, however, very little of real marrow, only blood vessels. The bone becomes much harder and denser, and develops a regular lamellae system, so that without doubt it can be regarded as compact bone, and can pass very rarely into a firm sclerotic bone entirely lacking in marrow and with few blood vessels."

Again quoting Manasse: "With exceptions, two forms of bone will be met with in the diseased areas, both representing in the majority of cases the early stages of the disease. First, small open

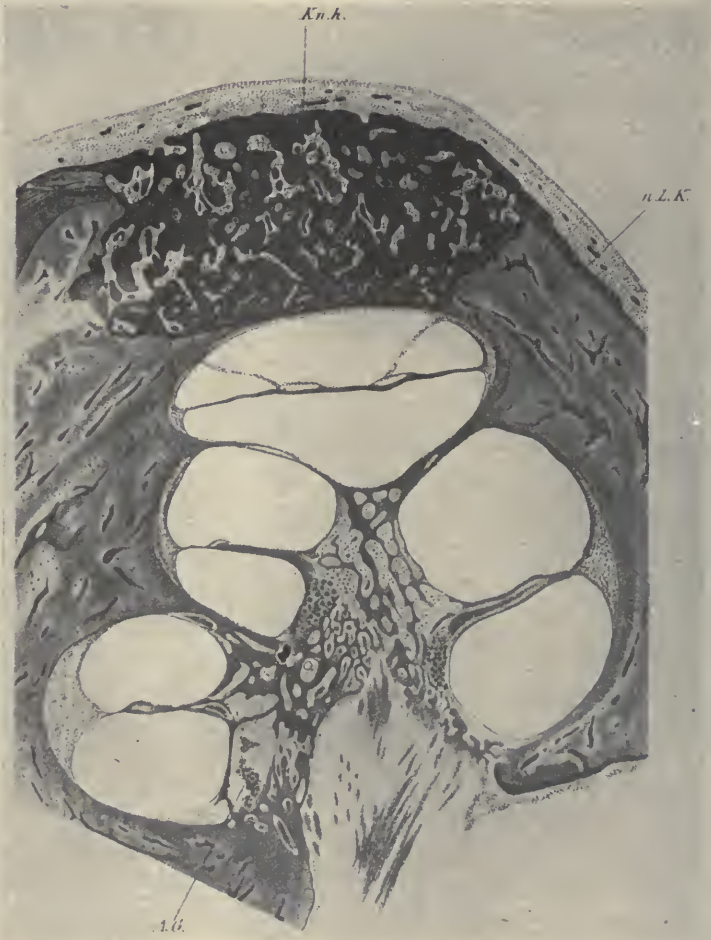

Figure 3—Case 10: Right. A section through the cochlea; circumscribed pathological area of bone. (K. n. h.), in the capsule extending to the cochlea. The transformed bone involves the entire thickness of the capsule from the periosteum of the middle ear to the inner periosteum of the cochlea. It is formed almost exclusively of recent newly-formed bone as can be seen from the dark color. In the membranous labyrinth, degenerative atrophy, in the organ of Corti, the spiral ganglion and in the fine ramifications in the cochlea. The sinking of the Reissner's membrane is not pathological but post-mortem. N. L. K. Normal labyrinthine bone. (From Manasse's collection with permission.)

spaces with pronounced bony trabeculae, coloring very bright with hematoxylin. and second, larger open spaces taking a darker stain and with fewer and smaller areas of bone between. The bright are the older diseased areas, the dark the newer. Neither is composed of compact bone, and as Siebenmann pointed out, both are lacking in the intercellular spaces containing cartilage, which are characteristic of the normal labyrinthine capsule. The newer bone tissue shows between the thin, bony trabeculae large open spaces containing a tissue rich in round rells, cylindrical cells, and osteoblasts as well as osteoclasts. There are no large blood vessels; only capillaries, no compact connective tissue, no myoblasts nor red blood corpuscles, no fat tissue, and only a small amount of intercellular substance. The picture, as a whole, is one of granulation or new connective tissue, not of lymphoid marrow. Certain spots in the bone substance which take a deep blue color, are transparent, contain only small, three-cornered bone cells such as is met with in immature bone, and show a peculiar sieve-like rarefaction, the round, long or jagged holes of which are each filled out by a single cell. These holes often come together forming canals. They also contain capillaries and empty into the larger open spaces. Osteoblasts and osteoclasts are never met with in the narrow spaces of these deeply-colored bones. The older form of the new-formed bone is composed of larger bony trabeculae which take a brilliant red color and which form a distinct network. The bony substance shows both jagged and plump bone corpuscles, but no lamellae system. The open spaces contain few cells, often only one large, wide, thin-walled blood vessel, but also a fairly soft, connective tissue with lymphocytes, spindle-or star-shaped cells, and several vessels. This fibrous marrow passes occasionally over into the fat marrow and at times into the yellow marrow. Osteoclasts are met with more often in the larger areas than in the smaller. In the older parts of the large areas, the picture is one usually met with where the bone has been formed out of Haversian canals, but nowhere is there a reforming of the intercellular spaces containing cartilage.

We cannot go too deeply into the minute histology represented in Manasse's studies; but the question of the primary source of the diseased process must be referred to. Manasse thought for a long time that this was to be found in the osteoclasts which are seen in the perivascular connective tissue in the bone, but his more careful study showed him that the initial stage proceeds from the blood vessels themselves. The second interesting question is the origin of the sieve-like rarefaction which represents the most recent stages of the new bony growth. Manasse believes these minute openings to be where the bone corpuscles were previously found. As he remarks, this form of bone absorption is not unknown. M. B. Schmidt, among others, has carefully described this process. Manasse's conclusions are as follows: "The alteration of the labyrinthine capsule begins with the formation of osteoid and granulation tissue within the preformed blood-vessel spaces. The old bone is destroyed as the result of this new tissue growth by the simple process of compression, not through lacunary absorption, and the new bone tissue takes its place. This has only an intermediate character, in so far as it in turn is destroyed by two different methods of absorption. First, through a sieve-like rarefaction of the new bone tissue, and second, through lacunary absorption with the formation of osteoclasts. There follows a third deposit of bone in the marrow spaces as the result of osteoblast activity, which is at first spongified in character, and which does not disappear. As time goes on it becomes denser and harder and finally fibrous. The marrow spaces become smaller, the bony trabeculae always thicker, a lamellae system develops, and finally compact bone is formed which is always to be sharply differentiated from the old labyrinthine tis-

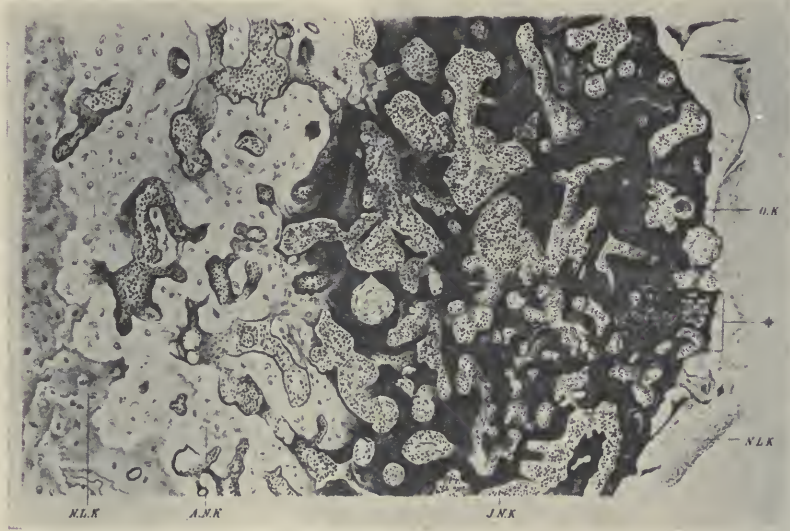

Figure 4—Case 1: Section through the portion of the new-formed bone lying near the cochlea. A stronger enlargement. We see on the left, the light-colored older portions of the new-formed bone. A. N. K. On the right, the dark-colored younger portions. J. N. K. Both are sharply separated from the normal labyrinthine bone. N. L. K. The former consists of dense bony tissue containing a few large vessels. The latter contains many more open spaces and many more cell element. At O. K. we see an osteoclast in the new-formed bone. Nowhere are osteoclasts to be seen on the border of the pathological and the normal bone. Here always the newly-formed bone substance crowds close on to the old labyrinthine bone without any cell elements. The star shows the cribriform rarefaction of the new bony growth. (From Manasse's collection with permission.)

sue. The whole process is, to Manasse's mind, an inflammatory one, and he has accordingly named it "Ostitis chronica metaplastica der Labyrinthkapsel."

With these views most recent investigators agree, including Otto Mayer, Panse in his newly appeared "Pathology of the Ear," and Bruehl, except that Bruehl is not prepared to admit that the process is a true inflammation. Manasse does not, however, stop here, but in addition to the changes in the bone, describes changes in the membranous labyrinth and claims, based on his seventeen specimens where changes without a single exception are met with, that alterations in one or more portions of the sound-perceiving apparatus, namely, either atrophy in the organ of Corti, connective tissue deposit in the fine nerve filaments in the cochlea, similar changes in the spiral ganglion, or finally in the auditory nerve itself, are an essential part of the disease. He contends, indeed, that in every case of chronic hard-hearing of a high degree, whatever the cause may be, there are always the same changes in the membranous labyrinth He does not presume at the present time to say whether the bone changes cause those in the labyrinth, or vice versa, although in one of his cases, where the labyrinth was diseased on both sides but the patient heard better in the ear where the bone was not affected. he does not think the labyrinth could have been involved as the result of the bone disease.

From these views of Manasse regarding the membranous labyrinth, Bruehl vigorously, and it seems to us, with good reason, disagrees, or rather argues "not proved." In the first place, nothing is more difficult to determine than what changes in the membranous labyrinth are pathologic and what are post-mortem. The tissues are exceedingly delicate, and subject to post-mortem influences in the time elapsing after death, and from the processes adopted for their examination. This objection Manasse admits, and defines certain alterations found, as post-mortem and some, such as atrophy of Corti's organ, as pathologic. Further, it is impossible to positively show whether the change in the soft parts does not develop long after the original bone disease, and even as a result of the intercurrent affections, possibly acute, which carried the patient off. Bruehl, indeed, insists that such changes are in no way characteristic as they are met with in all severe affections of the middle-ear. Finally, it is too much to say that either clinically or anatomically they are always present. In two young patients recently examined by Bruehl, suffering from otosclerosis. the one 34 years of age, and the other 24 years old, there was no lowering whatever of the upper tone-limit, while in a case just reported by him showing microscopically the characteristic bone changes, the organ of Corti was entirely normal. The most that we can assert, then, at present, is that changes in the membranous labyrinth are frequently, though not invariably present; whether they are a necessary part of the anatomic disease is yet unproved, but they are of sufficient importance to be always borne in mind. Functional tests showing nerve-deafness do not necessarily prove that the cause lies in the disease under discussion, but if slow in onset and if all other causes can be excluded, render such alterations in the membranous labyrinth highly probable. What is urgently required in order to throw more light on this difficult question are carefully studied temporal bones of young subjects in whom otosclerosis has been diagnosed clinically. This, as we said at the outset, is manifestly difficult. The one objection to Manasse's studies is that his specimens are chiefly from aged people where we should normally expect changes in the labyrinth.

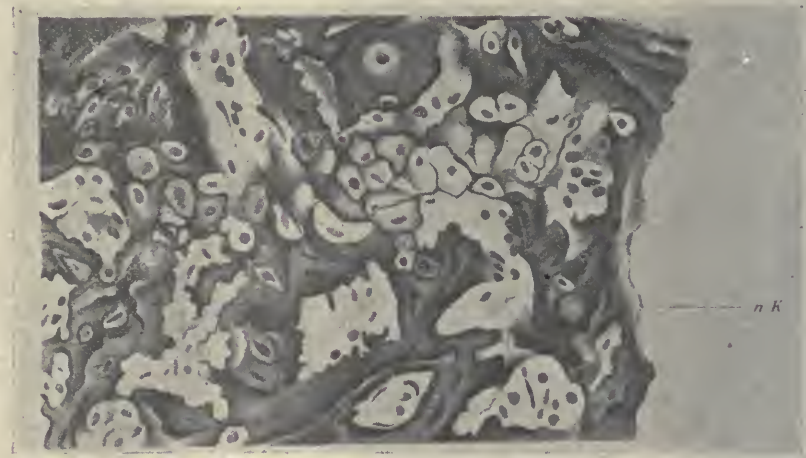

Figure 5: A higher magnification of the previous figure showing destruction of the new formed bone as the result of cribriform rarefaction The bone is very porous. A cell is to be seen in each cavity. In certain places the cavities have separating walls which are very thin. In other spaces these are lacking and they are confluent, forming streets or large spaces on the border adjacent to the normal bone. M. K. No cells are to be seen. (From Manasse's collection with permission.)

Of far more interest to us as clinicians, than Manasse's histological studies, is his statement in regard to ankylosis of the stapes in his cases, and the deductions which he draws from this. In only three cases, five temporal bones, was ankylosis found. In the remaining twelve bones the joint was uninvolved. Manasse concludes, based on these findings, that anatomically speaking, stapes ankylosis can no longer be regarded as an essential part of the disease, nor even can it properly be said that these findings are due to the early stage of the disease, and that later there would have been such an involvement, for in two cases at least, the microscope shows the process to have been evidently an old one, which had stopped short of the stapes and the annular ligament. Manasse argues, furthermore, that even if stapes ankylosis is met with, it is impossible to say that it is bony in nature and due to the disease in question. He supports this contention by giving the histological findings of three cases of ankylosis, the first due to a lime deposit, the sec-

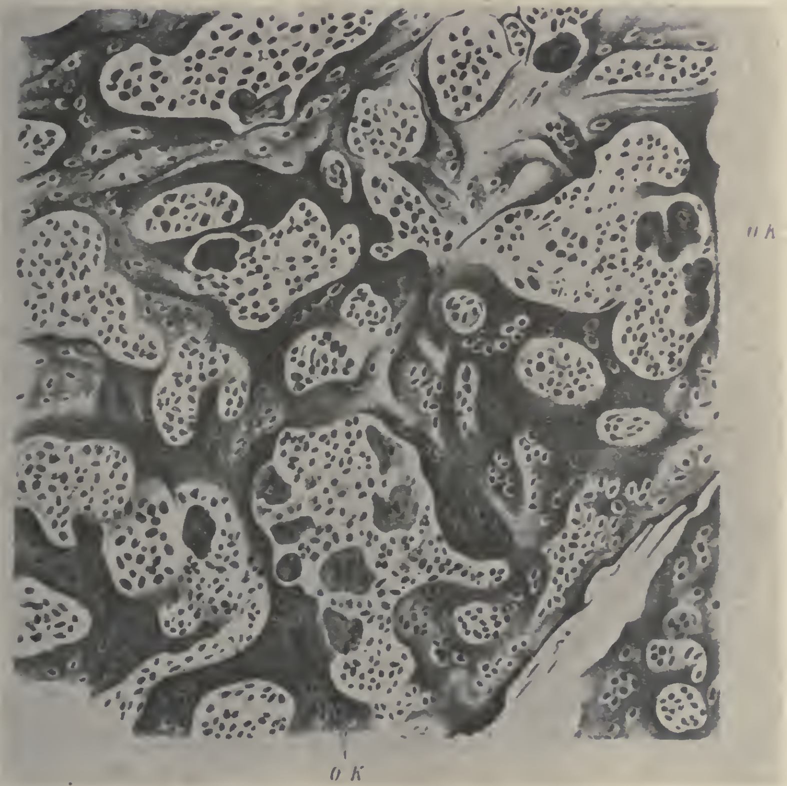

Figure 6—Case 5: Right. Section through the recent portions of large new bony growths. Extensive destruction of the dark-colored new tissue partly as the result of the Howschipschen, lacunae and osteoclasts (O. M.) and partly the result of cribiform rarefaction of the bone substance seen on the right-hand side below. On the left again new-formed bone. (From Manasse's collection with permission.)

ond due to otitis media chronica adhesiva, and the third, a result of a general periostitis of the stapes and of the inner wall of the middle-ear. It is evident that whatever the cause of the ankylosis, the functional tests will be the same, and Manasse accordingly advances the view mentioned previously and shared in by Panse, that chronic progressive hard-hearing is not possible of diagnosis. We can readily understand how, with all that has been written to throw doubt on the subject, one can gain this pessimistic decision. We cannot, however, admit Manasse's contention. It must not be forgotten that "Ostitis chronica metaplastica der Labyrinthkapsel," so minutely and painstakingly described by him, is strictly an anatomic disease. It is undoubtedly true that it may develop in other parts of the labyrinth capsule than in the oval window, and in such cases may produce no symptoms unless the membranous labyrinth is involved, when the upper notes will be affected. It is undoubtedly correct to say that there are many such cases which have never been recognized. It is, however, the clinical manifestations of the disease which interest us and concern us alone, and it is only when the disease has advanced to involving the stapes and causes an im-

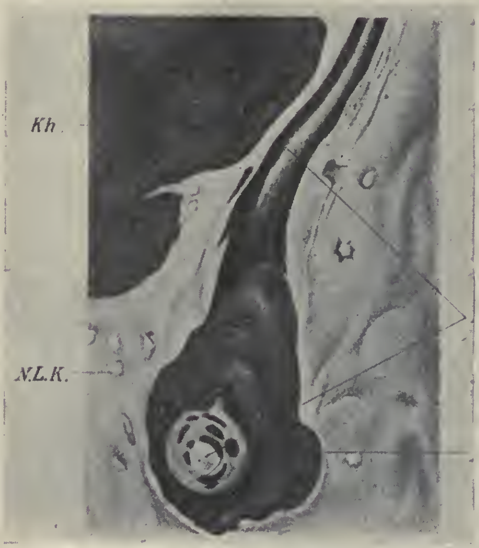

Figure 7—Case 4: Right. A higher magnification. Blood vessel in the bone (Kn. G.) Within the normal labyrinthine bone. (Nl. K. M.) The vicinity of the new formed bone. (K. b.) On the outer wall of the blood vessel we see new-formed, very young bone tissue, (N. g. K.), which presses in the form of hummocks against the old bone and the blood vessel which are thus being caused to disappear. (From Manasse's collection with permission.)

pairment or fixidity of that bone, that we can speak of it in a clinical sense. So it is proper to say that while there is an anatomic disease, there is also a clinical disease, and this, for a lack of a better name, will continue to be known under the name of *otosclerosis.*

While it is true that any form of ankylosis will produce the same functional tests, other causes than that due to a bone occlusion are so rare as to be excluded, although it must be borne in mind that such exceptions do occur. Panse states that he recalls a number of cases of deafness developing subsequent to confinement, which from the clinical course, the functional tests, the otologic pictures, and history of heredity, would have been regarded as otosclerosis. They, nevertheless, by use of the catheter and massage, made a marked and lasting improvement. Such exceptions occur and are constantly to be borne in mind in too promptly pronouncing the case hopeless.

To sum up, we feel that the pessimism in regard to understanding and diagnosing the disease is not warranted, and that while it is true that much is yet to be learned both as regards the histology and the etiology and that we can offer little for a cure so long as the latter is so obscure, we can confidently say that in the majority of cases, a determination of the disease is entirely possible. While nine years have elapsed since Denker's book on the subject, we regard his description of the clinical disease an eminently correct one:

"In the cases of progressive hard-hearing, which show an unchanged or virtually normal drum membrane, a patent Eustachian tube and the Bezold triad of symptoms, we may conclude that the pathological changes are only in the stapes and the annular ligament and in the bony areas bordering on the oval window. In the other cases where the funnctional test does not give the Bezold triad, but where there is a pronounced reduction of the upper hearing-limit, where bone conduction is not lengthened, and where the Rinné is not pronouncedly negative, there is in addition to the disease of the oval window an extension of the process further into the capsule of the labyrinth, or an involvement of the membranous labyrinth. While in most of the cases the mucous membrane of the middle-ear shows no change, in the cases of Scheibe and Habermann, and in those of Katz, the cause undoubtedly lay in a chronic middle-ear suppuration."

Consequently, as we took occasion in a former paper to point out, this or a similar middle-ear is not to be lost sight of in searching for a possible etiological factor.

104 East Fortieth Street.

THE TECHNIC OF THE LABYRINTH OPERATION.*

DR. EDWARD BRADFORD DENCH, NEW YORK CITY.

The various methods of opening the labyrinth are so well known, that it is hardly necessary for me to make very extensive remarks on this subject. It has occurred to me. however, that certain methods may be applicable to certain forms of labyrinthine disease, and for this reason I wish to call your attention for a few moments to the various methods which may be employed for opening the labyrinth for the relief of various labyrinthine conditions.

We have to deal with: (1) limited suppuration of the labyrinth; (2) diffuse suppuration of the labyrinth, with extension to the meninges, producing a meningitis; and (3) with certain non-suppurative conditions which may demand labyrinthine operation. I refer to those labyrinthine lesions, the prominent symptom of which is vertigo. Manifestly, the technic which might be required for the relief of a labyrinthine suppuration, the extension of which would terminate in meningitis, would be quite different from that required either in a case of circumscribed labyrinthitis or in a case where the labyrinthine lesion had never been suppurative, but had been a non-suppurative condition from the onset.

I shall describe, therefore, various methods of entering the labyrinth for the relief of certain pathological conditions: 1. A method for entering the labyrinth in cases of suppurative labyrinthitis, with probable extension to the meninges. 2. Methods of dealing with circumscribed areas of labyrinthine caries in which no general symptoms have been present. 3. A method of dealing with diffuse labyrinthitis with no symptoms of extension to the meninges. 4. Methods of opening the labyrinth in cases of chronic non-suppurative inflammation of the labyrinth, where the operation is performed simply for the relief of vertigo or, possibly, for the combined symptoms of vertigo and tinnitus.

For the first condition, that is suppurative labyrinthitis with symptoms of beginning meningitis, the best operation available at the present time is the one devised by Neumann. In this procedure the complete radical operation is first performed and the facial ridge lowered to its extreme limit. The dura in the middle cranial fossa is then exposed over the tympanic and tympano-antral roof, and the lateral sinus is exposed from a point just above the knee to as near the jugular bulb as possible. This leaves us a triangle, commonly known as Trautmann's triangle, bounded behind by the lateral sinus, above by the dura of the middle cranial fossa, and anteriorly by the ridge of the facial nerve. The dura is next carefully separated from the overlying bone in front of the sinus by means of a director and a protector, preferably the blade of a medium-sized curette, inserted between the dura and the bone. The bone overlying the curette is next carefully removed by means of the gouge and mallet, the strokes of the mallet being directed downward against the protector so as to prevent injury of the underlying dura. This procedure is carried regularly forward toward the facial ridge until the two limbs of the posterior semi-circular canal are opened. Next, three openings appear representing the two limbs of the posterior semi-circular and a transverse section of the horizontal semicircular canal. The removal of bone is gradually continued forward towards the facial ridge until one of the openings of the posterior semi-circular canal becomes an elongated slit. This shows the section of the *ductus communis* between the superior crus of the posterior semi-circular and the corresponding crus of the superior semi-circular canal. A fine probe is then inserted into the cross-section of the canal and carried into the vestibule. The openings of the cross-section of the canal are then enlarged in the direction of the vestibule until free vestibular drainage is obtained,—that is, until the ordinary probe will enter the vestibule. This drains the static portion of the labyrinth. The auditory portion of the labyrinth is easily drained by removing the thin layer of bone between the oval and round windows by means of a small gouge. This operation is of use when a suppurative meningitis, resulting from a suppurative labyrinthitis, seems imminent. The removal of bone should be continued below the facial ridge until the auditory nerve at the internal auditory meatus, is reached. The incision of the dura in the immediate neighborhood of the internal auditory meatus will drain the primary focus of infection and, if the operation be performed early enough, may avert a fatal meningitis.

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Unfortunately, while theoretically correct, the number of cures reported as the result of this operation are very few. In my own experience the operation has been devoid of value, as far as averting meningitis is concerned. As a method of draining a rapidly advancing purulent labyrinthitis the method is of great value.

In cases of circumscribed labyrinthitis, which are occasionally found at the time of the radical operation,—where a small, carious area has been found in one of the semi-circular canals, usually the horizontal, and in which no labyrinthine symptoms have been present, or in which the only symptom has been the fistula symptom,—it has been my practice simply to curette the diseased area in the horizontal semi-circular canal, so as to remove all diseased bone, but not to open the canal so widely that the barrier which nature has erected for the preservation of the life of the patient is destroyed. Such a localized curettement of a semi-circular canal has been followed, in my experience, by absolutely no symptoms. and these cases have invariably terminated favorably. It has been my practice to carry a separate strip of iodoform gauze down upon the curetted area, in order to block this off as much as possible from the general radical cavity, so as to prevent subsequent infection of the labyrinth from the radical cavity. In one case of this character the curettement was extended so that the probe entered the vestibule through the external semi-circular canal. In this instance, the entire tympanic cavity was covered by an epithelial graft as well as the posterior mastoid cavity, and the gauze packing was brought out between these two grafts. This case made a perfect recovery, with no labyrinthine symptoms.

The method which I have practiced in draining cases of diffuse labyrinthitis, with no symptoms of extension to the meninges, is perhaps the simplest procedure. This consists in: (1) the performance of the ordinary radical operation, with lowering of the facial ridge to its extreme limit; (2) the horizontal semi-circular canal is opened at its most prominent portion, and a probe inserted into its lumen. By chiseling downward and slightly backward, so as to avoid the facial nerve, the vestibule may be entered. Drainage of the cochlea is performed in exactly the same manner as described in the previous operation, namely, by the removal of the thin lip of bone separating the oval and round windows. This, of course, opens the first and second turns of the cochlea.

Two other methods of entering the labyrinth have been attempted in work upon the cadaver, for the purpose of finding out whether, in cases where the static labyrinth might require operation for the relief of vertigo in non-suppurative cases, a simpler operation is not available. In these cases we are operating in a practically sterile field, and unless the case is infected at the time of operation, or unless, as might happen, the area of operation is infected through the Eustachian tube, the conduct of the procedure should be possible as a thoroughly aseptic operation. It is perfectly possible to open the vestibule thoroughly below and behind the prominence of the horizontal semi-circular canal, without performing the radical operation. The procedure is rather difficult, and the field of operation contracted. I have never performed the operation upon the living subject, but from work done upon the cadaver I believe that the vestibule can be opened and thoroughly curetted in this way. This procedure should be of value in cases of aural vertigo which resist all other methods of treatment.

Another means of entering the labyrinth which has appealed to me in experimental work is that of entering the vestibule through its superior surface. In this operation, the horizontal semi-circular canal is exposed as the result of a complete mastoid operation. The mastoid operation should be continued so as to thoroughly expose the zygomatic cells, in this way giving a broad exposure of the tympano-antral roof. Such an exposure is necessary for the perfect conduct of the operation. The dura is next exposed in the middle cranial fossa by the removal of the tympano-antral roof. The bone covering the dura is next removed directly inward until the prominence of the superior semi-circular canal appears. This eminence is easily demonstrable if the dura is carefully raised from the surface of the petrous pyramid by means of a thin retractor. If, now, the gouge is applied over the prominence of the horizontal semi-circular canal and the superior surface of the petrous pyramid removed,—that is, if the superior wall of the horizontal semi-circular canal be removed and this removal is continued along the superior surface of the petrous pyramid,—the superior semi-circular canal will be opened. Removal of the fragment of bone which comprises the roof of the superior semi-circular canal will open the roof of the vestibule. The use of the curette in this region will then enable the operator to thoroughly destroy the canals and the terminal filaments of the auditory nerve lying in the superior and horizontal canals as well as in the vestibule. Similarly, the posterior canal may be thoroughly extirpated along the lines already laid down in the Neumann operation, that is, leaving the tympanic contents intact.

This operation appeals to me as possibly the ideal one in dealing with cases of aural vertigo due to a non-suppurative labyrinthine lesion. I have not performed the operation upon the living subject but its performance upon the cadaver is so simple as to recommend it in cases where we are operating in an aseptic field. Such an operation thoroughly destroys the contents of the horizontal canal, the superior canal, and the vestibule, and should be the ideal operation in cases of this character. Moreover, this operation can be performed without a preliminary radical operation. In other words, it can be accomplished through the ordinary mastoid operative field if the operation is made to include the zygomatic cells, without taking down the posterior wall of the external auditory canal, that is, without the performance of the ordinary radical operation.

These last two procedures, naturally, do not permit of any interference with the auditory portion of the labyrinth.

If the cochlea is to be opened, it is imperative, in most cases, that the complete radical operation be done in order that the operator may obtain a perfect view of the promontory and to enable him to remove the bony wall of the first and a portion of the second turns of the cochlea, by taking down the bridge of bone which separates the oval and round windows. Such an interference with the cochlea would not be necessary in cases suffering simply from vertiginous symptoms.

I believe we are about to arrive at a point where labyrinthine exploration will be a procedure of election in certain cases of impairment of hearing, progressive in type and involving the labyrinth. This remark is more in the nature of prophecy than along the lines of clinical experience, but I sincerely hope that at some future meeting I may have something to say regarding procedures of this character, having for their object improvement of impaired hearing in cases which have otherwise resisted all efforts on the part of the surgeon.

15 East Fifty-third Street.

Foreign Body Tolerated in the Esophagus for Twenty-seven Days Without Marked Reaction. G. LIEBAULT, *Revue hebd. de Laryngol.*, April 5, 1913.

The foreign body was a plate, holding artificial teeth, which was located in the esophagus by means of the esophagoscope. Efforts of removal by the buccal route proved so difficult that a retrothyroideal laryngotomy was planned, when the foreign body was finally removed by the esophageal forceps. In spite of the prolonged pressure of the foreign body there was very little sign of irritation and no abscess or suppuration. SCHEPPEGRELL.

THE DIAGNOSIS OF RUPTURE INTO THE LATERAL VENTRICLE AND OF ACUTE INTERNAL MENINGITIS.*†

DR. ERICH RUTTIN, VIENNA.

A brain abscess, especially a temporal lobe abscess, can lead to meningitis in various ways. The most fatal way is through rupture of the abscess into the ventricles, causing thereby an instantaneous flooding of all the cavities and recesses of the brain (pyocephalus internus) and a quick spreading of the suppuration to the meninges. These cases run such a rapid course and manifest such severe symptoms that present-day therapy is almost powerless to combat them. It is, therefore, very desirable to diagnosticate this occurrence with certainty, the more so because statistics teach us that this is the most frequent cause of death associated with temporal lobe abscess.

I have observed a seemingly constant symptom in acute pyocephalus internus. This consists of a very pronounced vertical nystagmus directed upwards. The following three case-histories support my observation.

Case 1: Theresa Ch., 20 years old: servant girl. Nothing is known concerning the patient's previous history. She was admitted to the Urbantschitsch Clinic, November 19, 1911, in a somnolent condition, at which time I made the following examination: Left ear, atrophic scar. Right ear, chronic, fetid suppurative otitis media. Hearing in the right ear (tested with the noise apparatus) shows conversation voice *ad concham.* Weber to the right. Rinné negative on both sides. Bone-conduction somewhat lengthened. c_4 on both sides +; C_1 on the right side —, on the left +. The statements of the patient are not very reliable, owing to her somnolent condition. Caloric reaction on the right positive, but weak. Fistula symptom + with tremulous but distinct eye movements. No spontaneous nystagmus. The mastoid process is not tender to pressure, except at a point below the antrum. Paresis of the left lower extremity, loss of patellar and abdominal reflexes on the left. Pupils equal and react to light and accommodation. No paresis of the eye muscles. Cranial nerves free. Dermography +; Kernig

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†Translated at the request of Dr. Ruttin, by Dr. Irving Wilson Voorhees, New York City.

+; neck stiff; tenderness on pressure of the eye-ball; photophobia; tenderness to pressure over the vertebra; abdomen retracted; no ataxia; eye grounds normal. Pulse 90; temperature 39°; apathy. Lumbar puncture gave a diffuse, cloudy fluid under high pressure. There were numerous polynuclear leucocytes but no bacteria.

I therefore made a diagnosis of temporal lobe abscess and operated at 11 o'clock that night. In the mastoid cortex I found a fistula the size of a hemp seed. There was a small subperiosteal abscess. The mastoid process was sclerotic. The antrum was very large and filled with fetid pus. The typical radical operation was performed. The dura of the middle fossa was slightly under tension at one point, but incision in three directions was negative. After several trials, very fetid pus under high pressure escaped from the posterior part of the temporal lobe. The evacuation occurred very suddenly and collapse followed, which, however, was overcome through artificial respiration.

November 11: Paresis of the extremities had disappeared. The reflexes were again present but difficult to elicit. The other symptoms were the same, especially the Kernig and the stiffness of the neck, which were pronounced. Vertical nystagmus upward. Temperature, 39.1°; pulse, 100. November 12: Temperature 37.8° and 39°; pulse, 90. November 13: Temperature 36° and 39°; pulse 84. The eye-ball is sensitive to pressure and light; pupils equal and react. Neck stiff and tender. Trousseau; Kernig +; all reflexes present but elicited with difficulty; consciousness benumbed. It was easy to awake the patient, but she fell into stupor again very quickly. Sensation present; also deep sensibility; no unilateral paralysis; strength of the hand-grips about equal; vertical nystagmus upwards. Upon changing the dressing, fluid escaped. November 14: Temperature 38.3° and 39°; pulse, 84. November 15. Exitus.

Post-mortem findings. (Pathological Anatomical Institute, Hofrat Weichselbaum). A temporal lobe abscess, the size of a walnut, putrid contents and perforation in two places in the right lower horn of the lateral ventricle. Suppurative meningitis with a trifling amount of exudate. Parenchymatous degeneration of the heart and kidneys. Fatty degeneration of the liver. Radical operation on the right middle-ear with drainage of the abscess five days ante-mortem.

Case 2: J. H., age 40 years; life insurance agent; admitted March 5, 1912; anamnesis. Patient suffered an attack of "Fraisen" in childhood, otherwise he does not remember any other diseases. At the age of 19 he had discharge from the right ear. At times there was a marked suppuration. Four or five weeks ago he suffered a recurrence of this marked suppuration in the right ear. There is burning and sticking sensations in the right temporal region and in the vertex. No headache; no noise, and until now the patient was very seldom under the care of a physician. He was advised by a specialist to come to the clinic for operation. He cannot remember any secretion from his left ear. His hearing-power on the right is diminished. His internal organs are sound. No venereal disease. In early life the patient was a hard drinker. Fourteen days ago, suddenly, during the night, the lips became drawn toward the left and he could not shut the right eye as well as the left.

Present condition, March 6, 1912. Facial paralysis on the right, especially noticeable at the angle of the mouth. Left ear perforation of Shrapnell's membrane. In the depths of the right ear of the canal, a broad, prominent, large, grayish-red, easily bleeding polyp taking in almost the entire lumen. There were also a few granulations below. The secretion was very trifling. Mastoid process not tender to pressure. Conversation voice on the right, 5 to 10 cm. On the left, + 7 cm. Whisper-speech on the right not heard; on the left, 4 m. (All tests by the noise apparatus.) Weber in the head; Rinné on the right —; on the left +. Schwabach on the right, somewhat lengthened; on the left, normal. C_1 heard on the right by strong stroke; on the left, by slight stroke; c^4 on the right heard only by a strong stroke; on the left by a slight stroke; no noise; no dizziness. Spontaneous nystagmus present; fistula test negative; caloric reaction on the right, weak; on the left, strong. Temperature, normal.

March 11, 1912: Operation (on the right) by Prof. Urbantschitsch. Typical radical operation. Many polyps in the tympanic cavity. At the point where the facial ridge lies below the horizoneal canal, there is a rough fistula, not in the semi-circular canal. Palpation of this spot elicited lively facial twitchings. The fossae of the skull were not laid free. Plastic after Panse. Wound dressed.. Temperature 38.4° and 38.2°.

March 12: Temperature 38.2° and 38.8°; March 13: Temperature 37.8° and 38.2°; March 14: Temperature 36.7° and 37.2°; March 15: Temperature 36.4° and 36.8°; March 16: Temperature 36.4° and 36.1°. Dressing changed. Removal of the wound clamps. No reaction in the wound. March 17: Temperature 36.5° and

37.6°. Normal course. No increase in temperature. March 20. Patient was dismissed to the Out-Patient service with a satisfactory granulating wound. March 30: Patient came for dressing. Looks very pale; complains of headache and dizziness. Nothing special to be seen in the wound. However, the fistula symptom is very marked. Hearing (with the noise apparatus) present. No spontaneous nystagmus. The patient was advised to come immediately into the hospital; he came on the next day.

April 1: Readmission. Temperature, 37°. General condition as on March 30. April 3: I was called at 5 o'clock in the morning, when I found the patient, whom I had not observed previously, semi-conscious; very restless; stiff neck, abdomen retracted; Kernig; dermography; in short, all signs of meningitis. There was *marked vertical nystagmus upward.* Upon the presence of this symptom, I immediately made the diagnosis, rupture of a temporal lobe abscess into the ventricle with acute internal meningitis. Patient died the same night.

Post-mortem Findings:—Assistant, Dr. Schopper. Chronic suppurative otitis on the right with rupture of the pus through the tegmen antri into the brain and formation of an abscess the size of a hen's egg in the right temporal lobe; extensive softening and punctate hemorrhages into the ependyma of the right lateral ventricle. Pyocephalus internus, the result of rupture of the abscess into the posterior horn. Chronic emphysema of the lungs. Catarrhal bronchitis both sides. Moderate dilatation of the right ventricle; hypertrophy and clefting of the tonsils. Hyperplasia of the follicles at the base of the tongue in the spleen and intestines. *Etat mamelloné.* Bacteriologic examination of the pus showed mixed infection.

Case 3: M. Pat., age 23 years. Admitted on April 3, 1912. Patient was brought into the Clinic by her doctor with the diagnosis of meningitis. She had suffered for several years from right-sided aural discharge. Temperature 39°. Left ear normal; right ear, total destruction of the drum. Cholesteatoma in the attic with destruction of the lateral attic wall. Tympanic cavity filled with granulations; tip of the mastoid process tender to pressure.

Conversation Voice:—(Tested with the noise apparatus), *ad concham.* Weber to the right; Rinné —; bone-conduction lengthened $C_1=0.$ $c^4=0.$ Rotatory spontaneous nystagmus towards both sides; stronger toward the left than toward the right. No fistula symptom. Caloric nystagmus prompt.

Operation, April 10, 1912, by Assistant Beck. In the antrum there was pus under high pressure. Cholesteatoma in the attic and antrum; dura of the middle fossa exposed about the size of a lentil slightly changed. Semi-circular canal rough, but no fistula present Behind and above the horizontal semi-circular canal, several large necrotic cells were found into which the cholesteatoma had grown. Curettement. Typical radical operation. Plastic after Panse. Wound dressed.

April 12: Condition good but temperature 38.3°, falling in the evening to 37.3°. April 13: Temperature normal. Condition good. Appetite good. April 14: Temperature normal; condition good. April 15: At 4 o'clock in the afternoon, the nurse brought the information that the patient, who had hitherto been feeling quite well, suddenly collapsed and complained of severe pain, especially in the back of the head.

Examination:—Patient reacts when called (noise apparatus applied to the left ear). Lips pale; pulse small, arhythmic, bounding, 128. Sensorium clouded; Kernig +; neck tender to pressure; left upper extremity relaxed; left patellar reflex increased; lumbar puncture cloudy. Fluid contained isolated gram-positive cocci. Temperature 38.1°; strong vertical nystagmus upward. In spite of the fact that I had not previously seen the patient, on account of this nystagmus I made an immediate diagnosis of pyocephalus internus after rupture of temporal lobe abscess. Colleague Beck immediately enlarged the exposure of the dura in the middle fossa and found the same somewhat discolored and under high tension. However, the incision of the dura and puncture of the temporal lobe with the scalpel in various directions was without result, also exploration with the forceps. On this account the dura of the posterior fossa was also laid bare but was not incised since it appeared normal. On the evening of the same day the patient died.

Post-mortem findings:—Assistant, Dr. Schopper. An abscess about the size of a walnut surrounded by a pyogenic membrane was found at the base of the right temporal lobe. Rupture of the abscess into the right lateral ventricle and pyocephalus internus. Radical operation; opening of the right middle fossa with incision into the temporal lobe about 1 cm. lateral to the abscess. Leptomeningitis spinalis with especial localization of the exudate at the base of the brain, in the region of the pons and the medulla as well as on the surface of the cerebellum. Slight parenchymatous degeneration of the myocardium. A trifling endocarditis of the mitral valve; passive congestion. Status lymphaticus.

The explanation for this phenomenon can only be hypothetical. I had already observed vertical nystagmus in a tumor of the corpora quadrigemina, and remembered opportunely rupture into the lateral ventricle. In the literature I found also statements which led to the assumption that there was probably an irritation of the quadrigeminal region. Nothnagel mentions a case of Henochs in which the left posterior quadrigeminal body was destroyed. Both eyes were directed strongly downward. There was lateral movements of the eyes, which could not be turned upward. Later, convergent strabismus occurred on the right and was, without doubt, to be considered in association with the meningitis. In this case it must be assumed that something took place which had a certain relationship with the vertical nystagmus, since we must assume an analogy to our experiments with horizontal nystagmus in which pathologic changes which produce vertical nystagmus upwards can bring about among other changes, deviation of the eyes corresponding to the slow component of the nystagmus downwards. Moreover, the assertion of Monakow appears to me in this connection worthy of mention. "In diseases of the quadrigeminal bodies, most cases show only partial limitations in the combined movements of the bulb, and especially of the movements upwards and downwards, less so from side to side." However this may be, we have at any rate, in the sudden onset of vertical nystagmus, a valuable symptom of acute pyocephalus, and since this, as we have seen above, is the most frequent form of meningitis after temporal lobe abscess, we may immediately make the diagnosis from the severe vertical nystagmus, and also the sad prognosis of rupture into the ventricle. On the other hand, we must take warning in a case of temporal lobe abscess showing this symptom, since, unfortunately, rupture into the ventricle or infection of the ventricle through a thin partition, even after opening the abscess, is quite frequent.

Edema of the Glottis. G. K. Collier, *N. Y. Med. Jour.*, May 3, 1913.

The unusual features in this case are glottic edema with epilepsy and the speedy, fatal course of the disease—two years. Tracheotomy was tardily performed after unsuccessful attempts at intubation.
Ed.

VERTIGO.

PROF. DR. PAUL FRIEDRICH, KIEL, GERMANY.

There are variable sensations variously described by physically normal individuals under the term of vertigo. One person will describe vertigo as a sensation resembling that which he had on looking into a ravine, or that of an unexpected glance downward from a high tower; another recalls a ride in a merry-go-round; the third recounts the sensations of discomfort and uncertainty experienced in a suspension car; and the fourth compares it to the vertigo felt on landing after a stormy sea-voyage. The productive factors of vertigo are as varying as are the descriptions of it.

The dweller in the valleys experiences these unpleasant sensations when mountain-climbing. The thought that he might fall into the depths, disquiets him and this compelling force grows almost irresistible. It overpowers him even though the path may be protected by a hand-rail which eliminates all chance of falling.

This forced sensation, associated with discomfort and fear due to altitude-vertigo is produced by the novelty of the surroundings. The lowlander on his first mountain trip is unable to appreciate the relative depths and heights and the changing views. These unaccustomed optical impressions disturb his habitual ideas of space and produce a vertigo which in turn deranges his bodily equilibrium. The optical impressions are augmented by the unaccustomed walking on a steep path. Climbing brings into action other muscles and the position of the body in walking upward is different than when walking on level ground. The body must adjust itself to the changed attitudes and movements so that its equilibrium is preserved. Bodily statics and dynamics must become adjusted at each changing attitude if vertigo is to be avoided.

Let us consider another example: Why is a passenger in a suspension car or airship seized with dizziness and why does the same passenger riding under the same external condition of stability in a railway car experience a feeling of certainty and pleasure? There, too, he is safe from falling. The maintenance of equilibrium is not disturbed by any movement of the body.

From this stationary point of observation the eye becomes accustomed to the rising and falling landscape, but in spite of this the upward and downward motion causes dizziness. This sensation continues even when the eyes are closed. That organ which is involved in this instance is the one which gives us the sense of orientation when impressions of sight, touch and muscle senses are excluded. It is the organ which has its seat in the semi-circular canal apparatus.

From this we gather that by vertigo we understand those sensations occurring when the organs which preserve our equilibrium and our sense of orientation are disturbed.

This complicated process is not due to one single organ, but to a whole system of sense organs which all function systematically under the control of a superior sense organ. Through them we are conscious of our position in space and of any changes in position and movements and through them our bodily equilibrium is maintained by purely unconscious mechanical, muscular action. Among such sense organs we may class the external and internal sense of touch with its corresponding muscles, the sense of sight and eye muscles and that static organ which is situated in the semi-circular canal apparatus.

We know that all our impressions are formed from previous impressions that through repetition become imprinted so that the slightest stimulus will reproduce them unconsciously.

Where impressions are formed by a combination of different perceptions, all of the contributing sense organs may be aroused by stimulating just one organ. It is characteristic that we can no longer isolate the single sense stimulations but that all the senses combine to produce a composite impression in which we cannot recognize the individual phases of the various impressions.

This combined system reacts unconsciously as a whole when anyone of its component parts is stimulated.

The separate apparatus which maintain our equilibrium and prevent dizziness must be regarded in the light of a system combining to work in unison. The various impressions made upon the peripheri of the several sense organs are conveyed to a central organ which probably has its seat in the medulla.

Impressions resulting from a stimulation of the touch organs, the sense of sight and the semi-circular canals differ in their specific sense energy, but all combine in the function of sustaining the equilibrium of the body.

As has been said, the co-ordinates of the various impressions are combined into a single result. For example, we do not note the isolated tone or character of a single instrument in an orchestra, but are aware only of a harmonious whole which leaves an impression of a unified, inseparable ensemble. The whole system of organs of equilibrium is controlled from a centralized point in which the various routes meet but the separate organs stimulated at certain points along their individual routes may set the entire system into action, because the single organs are in constant communication.

For this reason we notice the same result whether the equilibrium is disturbed by a stimulation of the touch sense, sight organ, semicircular canals or central organ. The stimulation will always pass through the whole co-operating system.

For example, a stimulation of a touch organ or muscle is communicated to the eye and semi-circular canal and these will respond in their habitual co-operative manner.

On the other hand, it follows in this closely associated system, that a single deficiency along any one route will affect the whole system. Equilibrium is at once disturbed. Vertigo results as soon as one of these single organs working in combination fails to function. With this premise established, I shall discuss the single factors which affect the sense of bodily equilibrium and our orientation in space.

The exterior sense of touch controls our impressions of our position in space as well as ideas of pressure and temperature.

The touch sense determines our ideas of the pressure of the support under us when reclining and the changing pressure on the various parts of the body makes us aware of the form of our own body as well as the form and material of the support. The newborn child is minus these impressions and only by exercise does he gradually develop unconsciously those brain centers which control the ideas of position of the body and its members and his sense of orientation. A more complicated process develops when the child learns to sit erect and to walk.

The touch sense comes into play now and that of the sole of the foot is of utmost importance in standing and walking. We recognize this easily when our toes come into unaccustomed or partial contact with the floor and cause us to totter or when we lose equilibrium in standing on an unsteady base. Walking in bare feet may at times produce uncertainty due to the unusual touch sensations which are strange to the clad foot.

However, the external sense of touch is not alone able to regulate our complicated movements. These are also influenced by an internal touch sense, which comprises those impressions, gained also through practice and controlled by the musculature of the body, the ligaments and joints, all of which we designate as the kinesthetic apparatus.

The young child learns the movements of his body through his muscles, ligaments and joints, since the inner touch sense is stimulated by single movements which arouse associations in the central organ. These, through constant practice, cause an automatic co-ordination. Thus systematic co-ordinated movements are acquired which in their impulse are influenced by the will but which in their execution are entirely mechanical.

This unconscious and purely mechanical process is first noted when we make movements that are unlike those associated with distinct impressions which we perform unconsciously.

No matter how securely we usually walk, we are unsteady as soon as we undertake a new method of locomotion. Walking on stilts illustrates the point. New groups of muscles must become adjusted in order to make walking possible with these elongated legs. The readjustment of equilibrium requires other musculature; the arms find support at the sides of the stilts and the rump muscles restore balance. A large number of instances might be cited to show that new movements performed under changed exterior conditions can only be acquired through practice. When this practice is lacking, disturbed equilibrium and unusual movements are the result. Gymnastics, tight-rope walking, and balancing must be practiced as well as bicycle riding, which requires a special adjustment of equilibrium, which, after it has been learned, acts automatically.

The foregoing remarks lead to the conclusion that lack of practice and adaptation of the internal and external touch sense cause uncertainty and giddiness that result in purposeless movements, defeating the desired result. Instead of sustaining equilibrium, they add to the unsteadiness of bodily statics and dynamics. The inexperienced ice skater, in trying to maintain his equilibrium, increases his dilemma by misdirected movements and only his fall restores his balance, because the accustomed stimulation of centers which control orientation in the reclining posture re-establishes the relation of the various parts of the body in space.

All of our movements are controlled by the eyes. We accustom ourselves to sight impressions in space and adjust the kind and direction of our movements to them.

Sudden changes in our surroundings through false estimates of space produce wrong impressions of our static relations. When riding in a train the landscape seems to be moving and we appear to be stationary until the train suddenly halts and produces in us an unpleasant feeling of lack of orientation. While our train remains standing, a train moving in the opposite direction, produces in us the feeling that it is we who move. When this train has passed by, our eyes receive an annoying, jolting impression of our position and instead of the moving train we see the stationary objects about us. An optical illusion may thus produce dizziness even when the body is in repose and when no movement of the body has given cause for disturbances in equilibrium.

Sensitive persons may experience equilibrium disturbance when obliged to pass over a bridge in walking along the road. The road appears to be a dam from which the ground slopes away to increasing depths. The eye looks beyond such depressions that seem to connect with the lower strata, and receives the natural impressions of this space. This optical association is suddenly lost when we reach the bridge and see the depths below. The surface impressions are changed and the flowing current and other objects in the valley below appear in different proportions than those to which the eye is accustomed. With this we receive a false impression of space, and we are overcome by the uncertainty in the estimate of the static relations of our own body to space. The results of such optical impression is an unsteadiness of movement, a groping walk, and an erroneous relation between the roadway and the depths below. This most frequent type of vertigo we term *altitude vertigo.* Hitzig ascribes this to a diminution of static sensibility; Wollenberg attributes it to our helplessness in estimating our relation to space.

There are two phases of altitude vertigo: mountain vertigo (Bergschwindel), tower vertigo (Turm-schwindel). Huguerin describes the sensation of altitude vertigo as follows: The first glance into the depths causes a peculiar sensation in the legs, as though the base on which the individual stands firmly were sinking, the legs tremble, the body sways and were it not for a firm support, the subject would pitch downward. This sensation disappears upon closing the eyes.

Fear of the possible consequences of such a fall accompany the impression that the base is giving away. A slight attack of altitude vertigo may develop after climbing a spiral stair in the interior of a tower and stepping onto a platform or balcony and suddenly glancing downward.

The pleasure which such a bird's-eye view gives to the observer who is free of altitude vertigo changes to a distinct feeling of discomfort in one who is subject to such vertigo. It remains with him until he is again on terra firma.

The above-mentioned sense organs, the tactile impression and sight, do not wholly account for the preservation of equilibrium. We can walk securely and perform complicated movements in the dark without the aid of the eyes in the maintenance of equilibrium. For this reason we cannot consider sight essential to prevent attacks of vertigo or loss of equilibrium.

In the water when diving or swimming we have no stimulation of either our sense of touch or sight to aid in the orientation of the body, and notwithstanding we are aware of the position of the body in space and are able to assume either a vertical or horizontal position. Accordingly we can also exclude the impressions gained from the tactile sense in the preservation of equilibrium.

The organ which assists in orientation is situated in the labyrinth and in that special part called the semi-circular canals which we must look upon as the sense organs which receive the impressions of position and movements of the head, thereby the head becoming the chief center of orientation for the whole body.

The position of the head influences our appreciation of our position in space. When the normal head position is changed through bending, lowering, or turning, the localized sense of equilibrium situated in the head becomes active; it signals to the remaining organs of equilibrium that the position of the head has changed, and accordingly the tactile and sight senses are obliged to react to this stimulation.

The semi-circular canals indicate the position of the head as well as that of the body, which is determined in the co-ordinated muscle action of the entire body. Certain gymnastic exercises prove that a change in the position of the head can produce equilibrium disturbance, unsteadiness and vertigo. Sensitive individuals experience vertigo in various calisthenic exercises executed with eyes closed.

The semi-circular canals make us aware of the horizontal and vertical position of the body as well as upward or downward movements.

How can we otherwise explain the sensation of ascending and descending when in a closed elevator with the body perfectly at rest than by an organ that unconsciously influences orientation? How else could we explain such sensations as diving or the turning of a somersault without other influences?

The semi-circular canals are so closely linked to the organ of hearing and because of the nerve trunk which they share in common, so bound up with it that the older physiologists believed it the seat of the hearing function. The arrangement, however, of the semi-circular canal apparatus into a geometrically co-ordinated system of triple planes suggests the probability of an independent organ which interprets the three dimensions of space: height, depth and breadth.

Long and wearisome experiments upon animals were necessary to establish a scientific basis for the study of the static function of the labyrinth. The experiences gained through observing animals were substantiated by observing the human who suffered from similar disturbances of equilibrium. One hundred years ago, Flourens noted peculiar disturbances in locomotion in doves whose semicircular canals he had removed. Much later, experiments upon animals were again undertaken and it was noticed that a dove whose labyrinth had been removed, staggered, moved more and more unsteadily and more hastily until she finally fell.

Another peculiarity is the direction taken by the subject. The walk is not in a straight line but swerves from the healthy labyrinth. Since this swerving is constant at every step, the direction takes on the form of a circular path. It is the so-called Manege-movement which causes the pigeon to move with a hasty, awkward, fluttering walk in a circle. The head assumes a peculiar, downward position turned toward the affected side. These experiments prove that the semi-circular canals control the equilibrium of the body and the muscle functions of the body in motion. The semicircular canals contain two elements of stimulation of the sensory nerve located there. The otoliths rest on the sensory hairs of the nerve endings in the utriculus and sacculus, and these, by their weight, stimulate the filaments of the vestibular nerve with every change in the position of the head; this stimulus is modified by these changed positions of the head. These two stimuli, known as the "maculae staticae," are arranged in two planes and seem to control our sensations of horizontal and vertical movements. The nerve-ends in the ampullae of the semi-circular canals assist us further in orientation. Here, too, we find sensory hairs as end-organs of the vestibular nerve. The maculae are controlled by the otoliths (Verworn terms them the statoliths) which stimulate the sensory hairs by their weight, while the sensory hairs of the ampullae are suspended freely in the labyrinth fluid and movement of this endolymph stimulates them. According to the theory of Mach-Breuer, we assume that changes in position of the head produce currents in the endolymph which, by its motion, stimulates the sensory hairs. The arrangement of the semi-circular canals in a geometric system, symmetrically bilateral and identical, admits of numerous sensations in the many possible positions of the head. The three planes of direction of the semi-circular canals do not correspond to the planes of the head but are grouped at an angle to the head. Furthermore, this offers an unusually exact orientation as two fixed planes are established by the otolith apparatus and the encapsulated semi-circular canal system transmits in a reciprocal relationship its varied sensations of space orientation.

The sensory impressions transmitted by the vestibular nerve to the muscle apparatus of the general system are very unusual and are as yet not fully determined.

The entire musculature of the body receives stimuli from this source by reflex routes which induce its activity and influence the general position of the body. (Tonuslabyrinth).

The symmetric bilateral construction of the body also plays an important role here because the evenly opposed semi-circular canals of each side must, correspondingly, conduct stimuli to the two sides of the body which must produce a different muscular impression on one side than on the other. Thus the superior right and the inferior left semi-circular canals, lying in a common plane and because of their similarly directed planes, are stimulated alike by a certain turning motion and the impression must thus reach a different group of muscles on either side. In this way it is possible to develop varying influences on the functions of the body-musculature by varying vestibular stimuli. The semi-circular canal system regulates the movements of the body. This is most marked in the reaction of the muscles of the eye and numerous observations have been made in this field.

Correct, systematic functioning of the eyes must be considered in the changing attitudes of the body when we admit the influence of the eyes in orientation. Therefore, the semi-circular canal system must be most intimately associated anatomically with the occulo-muscle system. Stimuli of the semi-circular canal system can produce characteristic ocular movement which in one apparatus must correspond to the function in the other. By slow and long-practiced movements, the one apparatus regulates the other by force of habit in that the stimuli of the semi-circular canal apparatus control the turning of the eyes. What is the result, however, when unaccustomed and augmented stimuli are produced to which the semi-circular canal apparatus and musculature through lack of habit cannot respond? We all know that form of vertigo due to rapid, active turning of the body as well as the passive form produced by the turning-chair or merry-go-round, which may occur with eyes open or closed, but which manifests itself similarly whether the eyes be open or closed. In either instance the same ocular reflexes take place. Vertigo resulting from turning leads to nystagmus.

The unsteady eye moves back and forth in its search for a fixed point by which to establish the position of the body in space. In turning on the merry-go-round we look for a fixed point in the surroundings, which disappears as we continue to turn, while we attempt to follow it with our eyes which are being influenced by our movement. As we turn more rapidly, the eye, which has followed the impressions passing to the right, must, by means of jerky movements, attempt to fix the new impressions coming from the left. In this way the unconscious to-and-fro motion of the eyes is produced, which we term nystagmus and which we recognize as a symptom of vertigo. It has just been stated that this movement of the eye, after the body has rotated, may be noted whether the eyes have been open or closed and that after such movements with closed eyes we may distinctly observe the tremulous motion under the lids and the sensation of vertigo is experienced. Therefore the connection between the semi-circular canals and the muscle apparatus of the eye is so intimate that stimulation of the former produces reflexes in the latter without the need of optical impressions or stimulation.

This leads to the conclusion that the disorder produced by the unusual stimulation of the semi-circular canal apparatus also affects the eye muscles. But since, as we noted previously, the entire body musculature is regulated by the eyes, a general vertigo results, causing unsteady motions, as though the body were trying to find a footing. The futility of these movements leads to greater uncertainty in bodily statics and dynamics. That, through habit, we are able to suppress vertigo may readily be noted in observing the pleasure which children experience in a swing or merry-go-round. Another instance may be cited in the dervishes who indulge in the rotary motion to an extreme that causes the normal individual to shudder. These observations demonstrate my hypothesis.

It should be emphasized that vertigo does not exist as an independent impression because it is not produced by a single organ. We have seen that the consciousness of the harmonious sensation of equilibrium, which the normal individual takes for granted, results from a systematic co-operation of all the involved sense-perceptions. This fact explains the presence of vertigo resulting from abnormal stimulation of the special sense-organs.

TUMORS OF THE SEPTUM.

DR. RICHARD H. JOHNSTON, BALTIMORE.

The rarity of tumors of the septum prompts me to report the following four cases which were seen in the clinic of the Presbyterian Hospital:

Case 1: A woman, 57 years old, came to the clinic complaining of right nasal obstruction. Examination showed a good-sized tumor in the right nostril attached by a pedicle to the septum just opposite the anterior end of the middle turbinated body. It was hanging low in the nostril and was pressing against the turbinate, which accounted for the obstruction. There had been no hemorrhage. The growth was easily removed with scissors and the wound cauterized. Healing was uneventful. Microscopic examination of the tumor showed connective tissue and glands with few blood-vessels. The outer surface which was smooth, was covered with columnar epithelium. The diagnosis was fibro-adenoma.

Case 2: A man, 35 years old, had noticed a growth on the right septum which he was constantly picking. He finally began to have hemorrhages and then thought it time to consult a specialist. The tumor was situated on the right septum about half an inch from the skin; it measured one-fourth inch in diameter and was lobulated in appearance. From constant picking it had assumed a reddish-brown hue. It was removed from its broad base with scissors and the wound cauterized. Microscopic examination showed numerous papillae, each with a central process of connective tissue. The diagnosis was papilloma.

Case 3: A boy, 7 years old, had had severe hemorrhages from the left nostril for some time. Examination showed a large tumor on the left lower septum which bled at the slightest touch. The growth was removed with the snare and the wound cauterized. Microscopically it was a fibro-angioma, the so-called "bleeding polyp."

Case 4: A man, 42 years old, had a small, pedunculated tumor on the right septum high up. It had the appearance of a polyp. After removal it was examined by Dr. H. J. Maldeis, pathologist to the hospital, who, to our surprise, reported myxo-sarcoma. As the patient has not returned to the clinic, we infer that he has had no recurrence. The first three tumors were examined by Dr. L. J. Goldbach.

807 North Charles Street.

REPORT OF A CASE OF PHLEGMON STARTING AS A PERI-TONSILLAR ABSCESS AND EXTENDING DOWNWARD AS FAR AS THE SECOND RING OF THE TRACHEA.*

DR. GEO. L. RICHARDS, FALL RIVER, MASS.

The following case is an example of a severe case of pharyngeal phlegmon having its origin primarily in a peri-tonsillar abscess and secondarily in a diseased tonsil. The patient was a large, well-nourished man, 42 years of age, of English parentage. The family history was negative. The previous history was that he had suffered from occasional quinsy sore throat for the past three years, having had two or three attacks. Otherwise he had been well. The patient presented himself in my service at the Union Hospital on the afternoon of August 20, 1909, with a history of a sore throat of several days duration, followed by difficulty in breathing and swelling of the entire left side of the face and neck. The left tonsil had been lanced once the previous day, and again on the morning of admission, but without relief, and the abscess had been continually increasing in size. At the time he presented himself he was breathing with great difficulty, and with occasional paroxysms of dyspnea and coughing. The entire left side of the face and neck clear down to the collar-bone was swollen and edematous. On examination of the throat, which was made with some difficulty, the tonsil and lateral wall and the supra-tonsillar area were intensely swollen, and largely filled the available area in the throat. The patient was near-cyanotic, with a pulse of 124. The skin of the neck was very tense, but I did not feel any definite fluctuation.

I assumed that I had to do with a large peri-tonsillar abscess, and sent him at once to the operating room. He was seated in a chair, a knife got ready, the tongue depressed, and an incision made in the supra-tonsillar fossa. This brought pus, and also a paroxysm of coughing. As the first opening had been more in the nature of a diagnosis as to the seat of the pus, and was only a small one, the patient was quieted, and then an attempt made to enlarge the opening. With the first enlargement of the opening there was a gush of pus, at the same moment an inspiratory spasm, a quick cry, and cessation of breathing. He was immediately placed on an operating table, but by this time respiration had ceased. Unfortunately, nothing was ready for a tracheotomy, and in the sudden shifting from the chair to the table the knife had been dropped on the floor, and momentarily lost. A hurry call for a knife brought me first a thin nasal chisel, which the interne in his hurry had mistaken for a knife, and a delay of several seconds occurred before a knife was obtained. The head was placed somewhat over the edge of the table, the neck on the stretch, and a quick incision made at the supposed site of the first and second rings. Much to my surprise, I entered not the trachea but an abscess cavity, and found that the abscess from above had burrowed downward producing a phlegmonous inflammation of the tissues of the neck, and had pushed the entire trachea and thyroid area well over toward the right, and itself extended down to a little below the second ring of the trachea.

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*Read at the Thirty-fifth Annual Meeting of the American Laryngological Society, Washington, D. C., May 6, 1913.

The lower abscess being opened, and while still flowing pus, I was able with the finger to orient the trachea which was then quickly opened. The patient by this time was apparently lifeless, but the pulse was still beating. Artificial respiration brought inspiration after a few seconds, and in a short time breathing was re-established, and a tracheotomy tube inserted. The abscess cavity in the tonsil was then widely opened with the aid of the finger as well as the abscess cavity at the site of the trachea. The two were found to communicate. The patient was placed in bed with the feet about a foot higher than the head, and kept in this position for the next three or four days, a wick being inserted around the tracheotomy tube.

The after-history was uneventful, the temperature which was 101.5° on admission slowly going down. There was an abundant pus-discharge from the mouth and at the side of the tracheotomy tube for the first few days. The tracheotomy tube was removed on the eighth day, and he was discharged from the hospital cured on the seventeenth day, the neck at this time being nearly healed. The drainage tube was continued until complete closure of the skin wound. He was advised to have the tonsils removed, but never came back to have it done. I have recently looked up the case, and find that he has been perfectly well for the last three years.

This case illustrates the possibility of danger in a case of peritonsillar abscess, and the absolute necessity of the evacuation of such an abscess; also the danger in allowing such an abscess to go on to the point where it discharges itself. It is sometimes stated that such an abscess will eventually discharge itself just about as well as when assisted. This does not seem to me to be the case. While it is sometimes true that they will find exit from the peri-tonsillar fossa at the junction of the anterior and superior pillars, it is never safe to wait for this. While cases such as I have described are probably relatively seldom, the possibility of the extension of a purulent process down the neck must be borne in mind. The course of the pus probably corresponds to the course of the bucco-pharyngeal fascia, which invests the constrictor muscles of the pharynx, and is given off from the prevertebral fascia, this latter fascia forming its posterior limit. The superior constrictor muscle, which is in close contact with the tonsil, is in relation externally with the prevertebral fascia. In this case the pus probably forced its way through the fibers of the superior constrictor muscle, thus gaining access to the prevertebral fascia. Thence it followed down the neck along the line of this fascia; thus coming in contact with the larynx and trachea, since this fascia forms the posterior limit of a fibrous compartment which contains the larynx, trachea, thyroid gland, pharynx and esophagus.

An error which I made here should also be avoided, namely, the attempt to open any such extensive phlegmonous collection of pus without being prepared for a tracheotomy. Again, so extensive an abscess should have been opened in the first place with the individual on the back. Pressure on the pneumo-gastric probably accounted for the severe dyspnea. As to exactly why the inspiration of the pus should have caused cessation of respiration rather than a paroxysm of coughing I am unable to state, unless relief of pressure on the pneumo-gastric produced for the moment some temporary paralysis or disturbance in function. I believe it is true that sometimes sudden cessation of pressure may produce some such effect on the respiratory centre.

124 Franklin Street.

Modern Treatment of Ozena. G. Mahu, *Presse Med.*, Jan. 4, 1913, p. 9.

Paraffin injections, methodical breathing exercises, and insufflation of lactic ferment are especially recommended. Mahu also mentions the various methods of nasal irrigation, the different syringes used for paraffin injections (Mahu, Gault, Leroux), and Foy's compressed-air instrument. Ed.

SIMPLIFIED TECHNIC FOR THE REMOVAL OF THE FAUCIAL TONSILS.

DR. L. F. LONG, ZANESVILLE, OHIO.

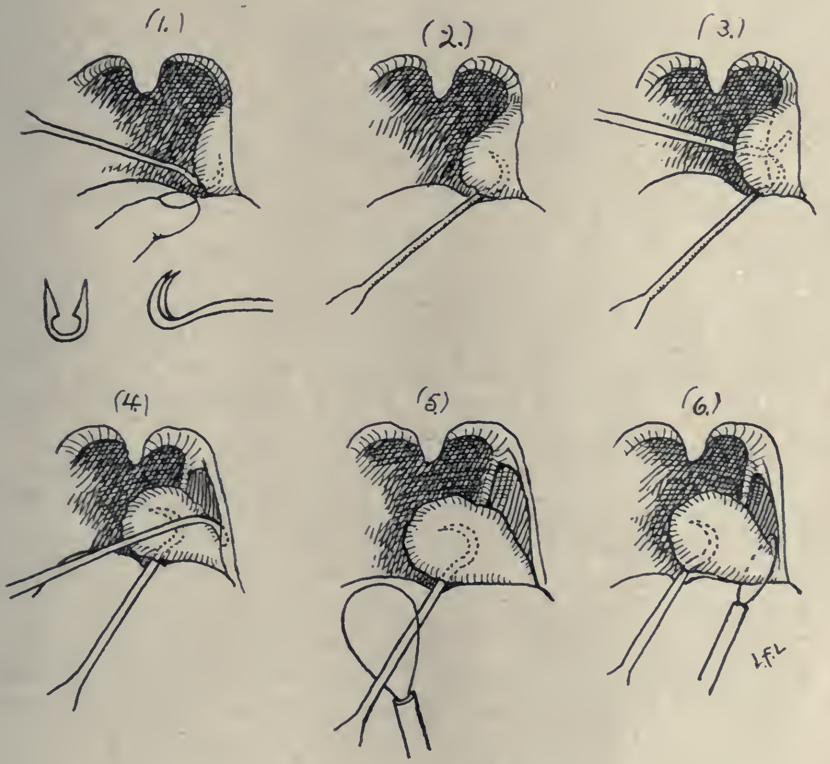
In all surgical operations the technic which is the most simple, requires the least number of instruments, the fewest assistants, and with which the work can be done quickly and well, is always desirable. In the removal of the faucial tonsil various methods are used with good results, some with quite an array of instruments, several assistants, etc. and the time consumed by various operators varies from a few minutes to an hour or two. With the technic I am using I have reduced somewhat the number of instruments and assistants, get good results and shorten my operating time.

The instruments used are: (1) A self-retaining mouth-gag (Murdock's). (2) A tonsil hook, which I have devised, having two prongs, with a thickening on the inner surface of both prongs, which prevents the hook from easily slipping out after it is placed in the tonsil. The handle of this hook is of such size that the loop of the snare can be easily slipped on or off the tonsil without disengaging the hook after it is once placed. (3) A tonsil knife (Tydings). (4) A strong tonsil snare (Tydings). These four instruments are all I use. I have in readiness a tonsil hemostat but very rarely have occasion to use it.

For illuminating the field I prefer an electric head-lamp, rather than a head-mirror or a light held by an assistant. In localities where the city current is not available, an electric head-lamp with a small battery attached is on the market, which answers every purpose.

Technic:—In general anesthesia I place the patient on the right side, with head low and have a small instrument-table within easy reach and view, upon which I have the four instruments named and a number of gauze sponges. The operator is seated, or with a high table the operator stands. If using local anesthesia the mouth-gag is usually not required, and the patient is in the sitting position.

Under general anesthesia as soon as the patient is relaxed the mouth-gag is quickly slipped in place and opened sufficiently to give room to see and work. The right, or lower tonsil is first removed. The index-finger of the left hand presses down the tongue and the hook is inserted from below upward, then by depressing the handle of the hook, the tonsil is lifted up and out and at the same time the handle of the hook acts as a tongue-depressor; this brings the tonsil in good view and the tonsil knife can be slipped between the posterior pillar and the tonsil-cutting upward around over the top and down between the anterior pillar and the tonsil.



This should liberate the tonsil so that it will roll out from its bed, if it does not, the knife should go over the same route until the tonsil is well liberated from the pillars and from the upper two-thirds of its bed. After it rolls out well the snare should be slipped over the handle of the hook without changing the hold of the hook, and the base of the tonsil snared off, the snare being drawn through the tonsil base rather slowly, as possibly this may reduce the amount of bleeding.

With this method the first tonsil can be removed before any, or, at most, very little sponging is required. Then by holding a sponge firmly against the bleeding-surface for a minute the second tonsil can be removed by the same technic. The whole process ought not take more than a few minutes.

The advantages of this method are: Simplicity, no assistant required except the anesthetizer. Good working space and view, no tongue-depressor or assistant's hand in the way. If properly done, it removes the tonsil within its capsule. The operating time required is short.

410 People's Saving Bank Building.

Ethyl-chlorid Narcosis in Operations on the Throat, Nose and Ear. ALFRED FALK, *Ztschr. f. Laryngol.*, Vol. 6, Heft 1, 1913, p. 1.

For such operations as the opening of a peritonsillar abscess, paracentesis, and removal of tonsils and adenoids that require only a short time, ethyl-chlorid, according to the writer, is the ideal anesthetic. It works best on a full stomach, two hours after a regular meal. The patient is sitting upright, children being held in this position by an assistant. As the narcosis may be accompanied by trismus, a dental wedge is put between the teeth. The narcosis mask is applied dry to the mouth after the patient has taken a few deep breaths, the ethyl-chlorid is sprayed all over the mask. When ice-formation takes place, the spray must be discontinued until all gas is inhaled. The signs of total anesthesia are muscular relaxation, ocular convergence and deep snoring respiration. In small children, where inspiratory stridor takes place at the onset of the narcosis and in hysterics that become excited after the first few inhalations of the gas, the mask should be removed for a few seconds and the narcosis continued when the respiration becomes regular. Up to the present time ethyl-chlorid narcosis has been resorted to in about half a million cases with only fourteen deaths due to the anesthetic.

GLOGAU.

CHRONIC STENOSIS OF LARYNX AND TRACHEA—REPORT OF CASE.*

DR. CHAS. A. LEAVY, ST. LOUIS.

The patient presented to-day, Miss H., contracted diphtheria January 5, 1895. Diphtheria antitoxin was not used in her case, for it was only being introduced into this country about that time. It was necessary to intubate her on the sixth day of the disease. The intubation tube was removed and replaced several times on account of the difficulty in breathing, and on March 12, 1895, a low tracheotomy was done.

When it became evident that the patient would be unable to dispense with the tracheotomy tube, a small curved silver cannula with an eyelet on either side was inserted with tape drawn through and tied to hold it in position. This apparatus was worn continuously until she was operated on January 10, 1911. Thus it will be noted that the patient wore the cannula about sixteen years, removing it occasionally, when necessary, for cleansing.

Previous to the attack of diphtheria, no serious illnesses occurred and fortunately none since.

Patient first consulted me on April 24, 1910. Numerous attempts were made to pass the very smallest laryngeal bougies through a tortuous canal to the left of the median line posteriorly, but without success.

As medication, thiosinamine (Merck) in half-grain doses three times daily was used for about two months with no apparent result. Two weeks prior to operation, patient was given tonics, and put to rest so that she would be in the best possible condition.

By laryngostomy is meant the laying open of the trachea and larynx, which must be kept open usually for a long period of time for treatment, the indications being chronic stenosis of larynx and trachea, where there is not too much deformity of the chondrial box. It was first performed by Ruggi in 1898. Later successfully by Doctors Jackson, Ballenger, Killian and others.

The operation on the case herewith reported, was as follows: The ordinary antiseptic precautions were observed. About one hour before beginning operation the patient was given 1-100 grain of scopalomin and ¼ grain of morphin sulphate hypodermatically.

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*Paper and patient presented at the meeting of American Academy of Ophthalmology and Oto-Laryngology, Niagara Falls, August 22, 1912.

Just before placing the patient on the operating table a few intralaryngeal applications of a 15 per cent solution of cocain hydrochlorate were made. Then about 20 minims of a one per cent solution of novocain and adrenalin were injected intradermatically in the median line, i. e. line of incision. The patient was then placed in the Trendelenburg position to prevent aspiration of blood into the lungs.

The incision was begun in the median line over the cricoid cartilage, dividing the tissues layer by layer, leaving a small bridge between the wound and the tracheotomy orifice.

After tying the bleeding vessels, a mattress-suture of catgut was placed on each side of the severed thyroid gland. The tracheotomy tube was removed and the opening of the trachea and larynx was completed with Jackson's turbinotome by inverting the turbinotome and placing the lower blade into the tracheal orifice, being careful to keep in the median line and to hold the lower blade firmly against the parts to be severed. The larynx was then laid open with one incision.

The moment the wound was laid open, two assistants quickly retracted each side of the wound to prevent the aspiration of blood into the lungs.

On inspection the stenosis was readily seen and consisted of an extensive mass of cicatrical tissue, just below the cords, extending down the posterior wall, over the body of the cricoid cartilage. The posterior wall was incised in the median line down to the cricoid cartilage, through the scar tissue, exercising care not to cut too deep above the cricoid cartilage, as the anterior esophageal wall is quite soft in this region and situated immediately posteriorly. The mucosa was then sutured to the skin on both sides.

A dilating drain tube was put in place beginning with number 22 French soft rubber catheter; the lower end being cut obliquely so it would rest on the tracheotomy tube below. The ends were made smooth by burning the cut edges over an alcohol lamp. A gauze plug was sutured in the upper end of the tube. This tube should extend above the cords and as high as the closure of the epiglottis will permit.

The proper length of the tube was established by passing the finger through the mouth and feeling the upper end of the tube. To retain this tube in place, a suture was run through the tube laterly, about one half inch above where the oblique end rested upon the tracheotomy tube, and the thread on each side tied to the tape plate. Before inserting the dilating drain-tube, it should be well anointed with sterile vaseline, placing the upper end first.

Fearing that the lower oblique portion of the dilating drain-tube might not rest on the tracheotomy tube below, but escape to one side, Furner's method was used, i. e., after cutting a hole in the lower anterior portion of the dilating drain-tube, squaring lower end, the tracheotomy tube was passed down through the opening made. In case the drain-tube does not fit snugly, a silk suture may be passed through and tied to the tape plate of the tracheotomy tube to prevent it from escaping into the lungs.

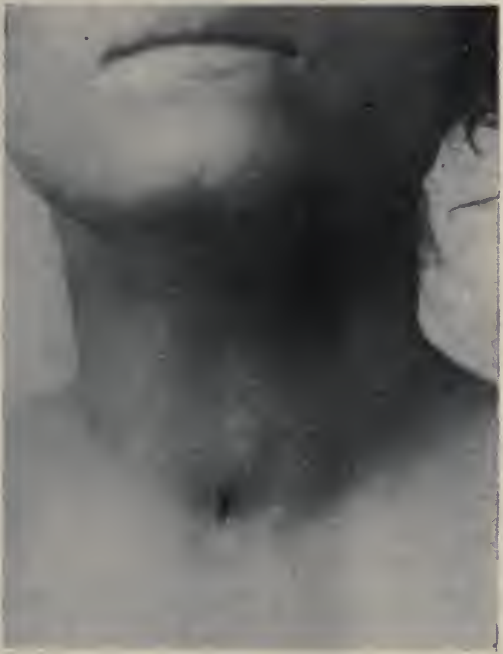

Figure 1 shows tracheotomy orifice, in which silver canula was worn, during the sixteen years the patient was unable to breathe through larynx.

It is well to have two tracheotomy tubes with dilating drain-tube attachments ready, so that when one is removed the other can be replaced immediately. Before placing the dilating drain-tube, it is advisable to have patient cough in order to expel the secretions from the lungs.

The tubes were changed every twenty-four to forty-eight hours. At first the external dressings were changed every three to four hours. They were moistened with bichlorid of mercury, 1-10,000 at first, and later with normal saline solution, as the parts became slightly inflamed. These gauze dressings were laid across the neck with the cut edges inverted; the first layer may be anointed with sterile vaseline and tucked into and over the inserted tube. Upon this a small role of gauze is placed in the wound, which assists in keeping the edges apart. It became necessary to touch up some granulations on the edges of the wound with silver nitrate.

The writer agrees with Doctor Chevalier Jackson, who said that the hardest part of the after-treatment, to those who have had little or no experience, is the proper selection and manipulation of the dilating drain-tube.

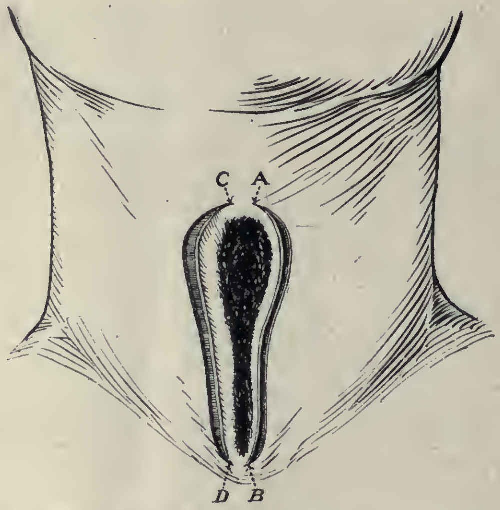

Figure 2 shows primary steps in plastic operation.

The only complication in this case was a sloughing of the cricoid cartilage on the twenty-sixth day after the operation, when a swelling of the tissues in the region of the cricoid cartilage was noticed. Dilation pressure was lessened. Three days later it was evident that a softening or sloughing of the cricoid cartilage was unavoidable. Two small openings were made, one on each side of the posterior wall, extending down to the lower edge of the body of the cricoid cartilage, for drainage purposes, and removal of small portions of cartilage as they became loosened. Covering a period of about six weeks, these cavities were cleansed, and in order to maintain and insure free drainage, a small wick of gauze alternating with rubber dam was inserted loosely into each opening, and dressings changed three times daily.

After the sloughing was over, the two small openings closed, and in a short time the posterior wall was perfectly smooth and no scar or trace of the openings could be seen. During the sloughing of the cricoid cartilage, the patient wore a smaller dilating tube than could have otherwise been worn; there was no rise of temperature; appetite good; slept well.

On April 15, i. e., four months and five days after the operation, instead of allowing the drain-tube to extend one half inch above the vocal cords, it was cut so that the upper end of the drain-tube rested one-half inch below the vocal cords. The lower end rested on the tracheotomy tube below, and was stayed to the tracheotomy tube by silk cord. The object of this was to spare the vocal cords all unnecessary pressure. This was more comfortable to patient, and in every way seemed more satisfactory. A good view of vocal cords could be had from below.

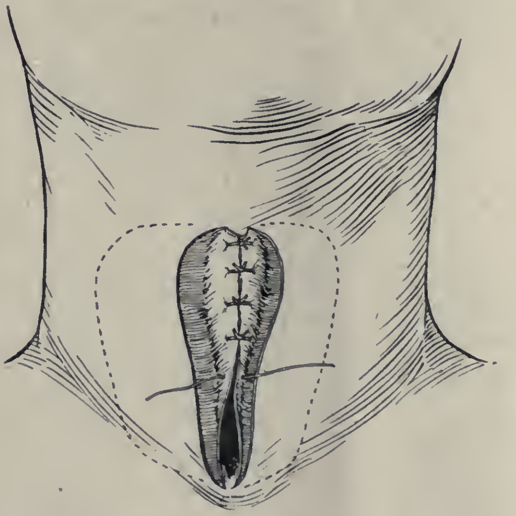

Figure 3 shows suturing in inner layer of plastic operation.

Three or four times during the seven months this method was used; a slight swelling and irritation was noticed where the upper end of the tube rested. Each time the use of the short tube was temporarily discontinued and a smaller and longer tube was used for a few days. After the tissues looked normal the short tube was again used.

Sargnon and Barlatier advise excision of the cicatricial obstructing tissues in cases of limited amount of tissue and instead of placing a dilating drain-tube, pack the cavity with sterile vaseline gauze.

The excision method is no doubt ideal in cases of limited amount of cicatrical tissue and especially in those cases where the same has not existed too long.

As weeks and months passed, in the treatment of this case, it was more evident that the open method used in this case was the very best and surest way of getting good results, as the cicatricial tissue was considerable in amount and was not confined to a small area. Even had the cicatricial tissue been limited in amount, in this case, the excision method would still have been impracticable as the chronicity of the case, i. e., the long period of non-use of the larynx and trachea had caused a general narrowing of the trachea below the cicatricial tissue; and where the small silver cannula, through which the patient breathed for so long, rested, two folds, one on either side of the cannula, had formed and the instant the cannula was left out, the two folds would close.

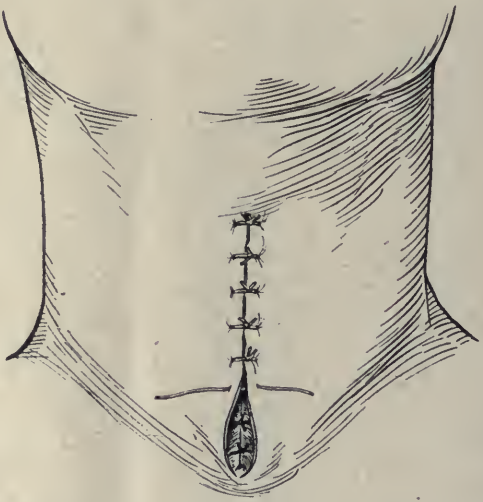

Figure 4 shows suturing of outer layer of plastic.

As stated above, the selection of the proper increasing dilating drain-tube was the hardest part of the after-treatment. The size of dilating tube was gradually increased from 22 French soft rubber catheter to size 36 French soft rubber catheter.

Before closing the external wound by plastic, dilating drain-tube was left out and the pathological field carefully inspected for a period of four weeks. When dilating drain-tube was out, the wound was closed by wide strips of zinc oxid adhesive, which were placed across the wound in such a manner as would best exclude the air.

This treatment was carried out for four weeks, replacing the dilating drain-tube twice during that time. The reason for replacing the dilating drain-tube was because of the accumulation of mucus, which would collect and dry in considerable amount in and about the wound. At the end of four weeks, no special change in the wound was observed.

Hence on November 2, 1911, nine months and twenty-two days after doing the primary operation, the external wound was closed by plastic. First incision through the skin from A. to B. The inner edge of the skin was dissected back to mucous membrane. The outer edges of the skin was dissected back one half inch. Second incision through the skin from C. to D. Same dissection as on the left side with the exception that the dissection of the outer edge was carried back one inch. By inverting inner right hand flap and suturing same to inner flap on left side, and by drawing the two outer flaps together in the median line and suturing from top to bottom, a small opening was left below, in which was placed a small gauze wick for drainage.

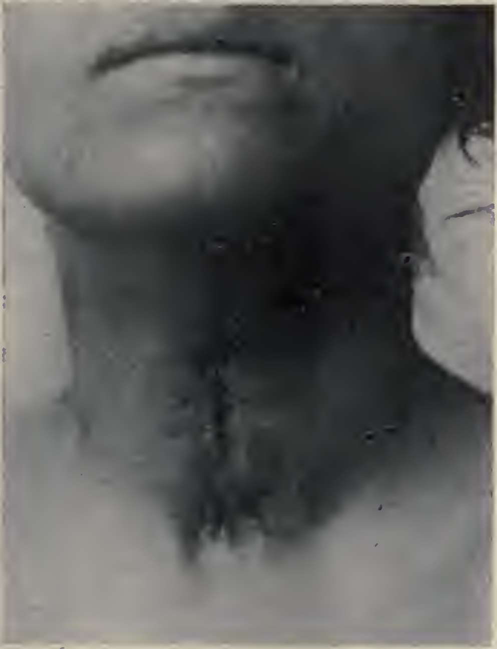

Figure 5; present appearance of exterior of healed plastic.

The wound healed promptly and nicely with the exception of the small opening where the gauze wick was placed. This opening was closed by a small plastic, four weeks later.

At intervals of one to three weeks after doing the plastic, soft rubber bougies were passed up to the first of last June. It was not urgent at any time, but the patient experienced a slight difficulty in breathing, due mainly to the accumulation of mucus, which seemed to form occasionally. Since June 1, the patient has not received any treatment and fortunately has not experienced any trouble in breathing. She has a low, but fairly strong voice.

SUMMARY: Patient contracted diphtheria January 5, 1895. Intubated January 11, 1895. Low tracheotomy was performed March 12, 1895. Being unable to breathe through larynx and trachea, the patient wore silver cannula sixteen years. Primary operation January 10, 1911. Cricoid cartilage began to slough February 5, 1911. Six weeks later sloughing was over and trachea was looking fine and smooth. Patient discharged from Hospital April 11, 1911. Closed wound by plastic November 2, 1911. To date, (February 1, 1913), patient's health is perfect; breathing normal; has gained in weight; voice low, but strong.

Metropolitan Building.

Otorrhea of Twenty Years' Duration Cured by Surgical Interference Combined with the Use of Wright's Vaccine. J. LABOURE, *Revue hebd. de Laryngol.*, March 29, 1913.

This is the first time that the author has used the Wright's vaccine commonly used in England. There are two kinds: the mixed vaccine prepared from the staphylococcus, streptococcus and gonococcus, and the auto-vaccine made from cultures of the microbes found in the patient. The latter has a much greater specificity and gives a much more active effect. In the cases described, the auto-vaccine alone proved active, four injections being used.

SCHEPPEGRELL.

REMARKS AND RESULTS ON TWENTY CASES OF LARYNGEAL DIPHTHERIA REQUIRING TRACHEOTOMY.*

DR. C. E. PURCELL, PADUCAH, KY.

In looking over the medical literature there appears such an endless array of successful cases, that one is inclined to believe himself a victim of uncontrollable circumstances when he has cases that do not go in accord with such reports. I want to reverse this order of procedure if for no other reason than to emphasize the early, careful and persistent treatment of laryngeal diphtheria.

Before I started on this report I asked one of our leading and most careful surgeons what had been his results in tracheotomy for laryngeal stenosis from diphtheria, and he instantly remarked, "100 per cent fatality." I asked other surgeons, equally careful and successful, about these conditions, and their fatalities have also been the same in all the cases operated on. All of the men in Paducah who do throat work exclusively and with whom I have talked tell me the same story. All the cases I have heard of where tracheotomy has been done with the exception of one, in the class of cases I mention and by men who essay to do special work, have terminated fatally. The exception noted was a child tracheotomized by Dr. Warwick M. Cowgill, formerly of Paducah but now of Lincoln, Nebraska. I did not get the particulars in this instance nor did I write to Dr. Cowgill, but one of our physicians here mentioned the fact that he was with Dr. Cowgill in this case and that it recovered. He, as well as others, may have successfully tracheotomized patients for so-called "croup," but I have not heard of it. I made a special point to inquire the final outcome in every case I could hear of in this locality where tracheotomy had been done, in order to compare results with mine.

At one time I was so thoroughly disgusted with the final outcome of these cases, even though they all would have died without the operation and even though I saved one in five, that I refused to go when asked, but kept up with the termination of the cases when operated on by other men, which, as I have before said was always fatal. I saw a case with a brother practitioner and I opposed tracheotomy when the child should have been given the advantage of the operation.

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*Read before the Southern Section of the Triological Society, New Orleans, February 16-17, 1912.

My own experience with tracheotomy as applied for the relief of profound dyspnea incident to laryngeal diphtheria has been twenty cases, and out of these I have four children living—a mortality of 80 per cent.

There are several questions that naturally suggest themselves, among which are: What was the cause of the high death-rate? Was death due in every case either in part or wholly, to the operation, or were there other contributing factors? If death was due to the operation, could not the technic be so revised as to overcome this fault? Why was it necessary to tracheotomize twenty children? Why not intubate? What bearing do the nursing and after-care have on the successful outcome of tracheotomies? And finally, what would have been the result in these twenty cases had tracheotomy not been done?

In the first place, I would have you bear in mind that these were the very worst cases we met, most of which were far removed from medical access, and the greater number might be classed as neglected cases. Seven or eight years ago diphtheritic antitoxin was not so universally used, and I found several practitioners who would not administer it under any circumstances. I believe that the operation *per se* was in no case the cause of death, because all were distressingly dyspneic and moribund, and there would have been twenty deaths instead of sixteen had the operation not been done. In only two cases did the opening in the trachea fail to supply sufficient air. In these two instances, the diphtheritic membrane had formed low down in the trachea and not having at hand the extra long tubes, both children died without any benefit from tracheotomy. I should also add that in most cases intubation had been previously performed.

It is significant to note that those that recovered were the oldest ones operated on—6 to 9 years old. The reason I assign for the oldest ones recovering is that their treacheas were better educated to throw off the secretions and exfoliated membranes, and the physiological activities of the cough-reflex more fully developed. It is a well-known fact that very sick children, exhausted from long carbonic acid poisoning are unable to throw off the abundant and excessive secretions from the trachea and bronchi, and unless relief comes, they all die. As a child grows and develops equilibrium and co-ordination, learns to interpret positions (orientation), it also develops the cough-reflex and the power of forcibly throwing off the secretions by expiratory blasts. An infant cannot blow the secretions from the nasal passages, nor can it expectorate. I have seen, as all of you have, the trachea full of secretions and the child made no demonstrable effort of ridding itself of them.

An indispensable aid in operations on the trachea is a nurse specially trained and fitted for such work. It has been very annoying to me after doing a tracheotomy with an immediate improvement in the child's condition in every way, to hear after twenty-four or forty-eight hours that the parents who acted as nurses, let the tube stop up with dried secretions, with the consequent loss of the child. For obvious reasons, this operation cannot be done in hospitals where correct nursing can be instituted. In small towns and in the country, the operation has to be undertaken under the worst conditions so far as cleanliness, convenience and assistance are concerned. I have done more than one tracheotomy by the aid of a very poor, dirty and small coal-oil lamp held by some kind neighbor woman. I have arrived at the apparently completely asphyxiated child abandoned by family and friends as dead, and have instantly opened the trachea without any cleanliness or anesthetic, as the child was already anesthetized by carbonic acid poisoning, and have been rewarded by saving a human life. Those cases that recovered have had the best nursing and after-attention. I myself have stayed up more than a whole night seeing to it that secretions did not fill up the trachea and trachea tube, and instructing those who were to nurse the child how to free the air-passages of troublesome secretions.

It is not my purpose to tire you by an accumulation of routine histories. I have selected from my records a few cases that illustrate the features in their management that have been impressed upon me.

A girl, aged 4, was seen by me, twenty miles from Paducah, with a membranous formation in the larynx. Breathing was very difficult and labored; the temperature was very slightly elevated, and the heart's function was unimpaired. The child was intubated and full breathing was enjoyed for a few hours. Antitoxin was sent for but before it could be had and administered, slowly oncoming cyanosis made it imperative to tracheotomize. Just as soon as the trachea was opened, the oxidation of the blood was re-established and all other symptoms at once improved, apparently to normal. After an hour's sleep, the child was refreshed and made signs for some toys. Having some pressing appointments at home, I could not remain overnight to oversee the nursing. I instructed those in charge how to remove the tracheal secretions and what to do if impending suffocation should occur. I then left the patient with every symptom normal, after administering anti-toxin, and the outlook was unusually favorable. Several hours after tracheotomy the tube began to fill with the secretions, the parents and friends became panic stricken, forgot my instructions, and the child suffocated. Here is a child that should have recovered with proper nursing and the removal of all excessive secretions.

The first tracheotomies were done under chloroform narcosis, and after a few hours when all conditions became rapidly worse, I could not help but feel that the anesthetic was a factor against the successful outcome of the operation, so that as more cases were seen, I finally adopted the practice of no general anesthetic and the non-use of sedations and hypnotics. The following case illustrates this point:

A boy, aged 6, was seen in January, 1904. He was so cyanotic and dyspneic that I pulled his head over the edge of the bed and opened the trachea without even washing the neck with soap and water. The family physician in charge was opposed to the use of anti-toxin, having seen some deaths from its administration, and therefore no diphtheritic serum had been used. There was an extensive membrane both in the pharynx and larynx and I insisted on the employment of anti-toxin. The physician in charge would not agree to give it and would not oppose my giving it, so I assumed responsibility and gave heroic doses frequently. The greatest trouble now was in keeping the tracheal tube free of secretions. I remained with the child over two nights, overseeing the nursing and instructing those in charge how to keep the trachea free of secretions, and the child recovered rapidly. You will note this child had no anesthetic, not even local.

If the patient is certain, or at least reasonably certain to require tracheotomy and is not too profoundly asphyxiated, it helps greatly to use a hypodermic injection of cocain and adrenalin at the point of incision. This is quite sufficient and the general anesthetic should not at all be permitted in these cases.

It has been, and is, my custom in these severe cases of laryngeal diphtheria to give large doses of anti-diphtheritic serum, frequently repeated. At the present, when there is such a widespread custom of giving immunizing doses of the serum to children exposed to diphtheria contagion, it might be well to pause long enough to see if this is the very best practice. Personally, I think it is not. Why? We know that we can produce artificially in animals the condition of anaphylaxis by the hypodermic introduction of certain substances. We also know this condition exists physiologically in man, when it would be very unsafe to administer a therapeutic dose of horse serum. That a prophylactic dose of serum might sensitize a patient and render a therapeutic dose dangerous or even fatal, has been proved by reports from all parts of the country. According to one investigator, 80 per cent of all serious accidents in the use of serum occur in those who have previously been inoculated. I always ask, before giving serum, if the patient has ever been given a dose. Knowing that every child or person exposed to diphtheria will not contract it and having the utmost confidence in anti-diphtheritic serum, I prefer to wait till conditions develop sufficiently to warrant the use of anti-toxin. Many sore throats with simple ulcers and streptococcic membranes are diagnosed diphtheria and treated with anti-toxin, when, if we depended more on laboratory tests, the certainty of our diagnosis would be evident and more positive therapeutics employed.

The questions arising from the consideration of the foregoing facts might be summarized in answering as follows:

The death-rate of neglected laryngeal diphtheria—cases where massive doses of anti-toxin have not been frequently given—will under the best management continue to be appalling. If these cases are seen early and a prompt diagnosis made. with the consequent employment of suitable doses of anti-toxin for these cases. there should scarcely be any need of tracheotomy. The high death-rate in my cases was due to the profound toxemia induced by diphtheria and not to the tracheotomy. The proper technic to follow is to infiltrate the tissues with a very weak solution of cocain and adrenalin, no general anesthetic permitted, and separate the muscles as rapidly as possible down to the trachea, when it is caught with the tenaculum and an incision sufficient to admit the tube made into it. When it is impossible to know the extent and location of all diphtheritic membranes into the air-passages and when the larynx is swollen and practically closed by deposits, I have always urged that intubation should be undertaken only by the most expert, if even then it is permissible. No one can feel the air-hole and every one is liable to dislodge the membrane into this air-passage; thereby cutting off all air and rendering tracheotomy imperative, difficult and immediate.

It should be made plain to the parents that the best results can be expected only when the tracheotomized child is in charge of a day and night nurse, both being competent to take care of all excessive secretions.

In this series of cases, I am most certain nothing short of tracheotomy would have saved the four lives, and had the patients been older, I am equally sure there would have been more recoveries.

Since writing this, I did, on February 22, 1912, a tracheotomy, where intubation had failed. The child was 20 months old and recovered.

208 Fraternity Building.

GOITER FROM THE STANDPOINT OF THE SPECIALIST.*

DR. MARTIN B. TINKER, ITHACA, N. Y.

All eye, ear, throat and nose specialists are interested in the general subject of goiter, I assume, much as I am interested in a general way in your management of the accessory sinus and eye conditions. Certain eye and throat manifestations accompanying goiter doubtless interest you and concern you much more than they do me. It is unlikely that I am capable of presenting these goiter questions as they most concern the specialist, but it will be my effort to present data specially concerning the relation of goiter to the eye and throat which I have collected from observation of several hundred cases during the past ten years, together with a few facts regarding the results of partial thyroidectomy and the many stage operation which I hope may have some interest for you. This will at least serve to introduce the subject for discussion, and I anticipate gaining far more information regarding the relation of goiter to the field of the specialist than I can possibly hope to bring to you.

Occurrence and importance of eye symptoms: In my experience eye-symptoms have been the latest to develop of any of the typical symptoms of exophthalmic goiter. In the average case circulatory symptoms are apt to appear earliest, nervous manifestations simultaneously or a little later, while the characteristic eye-symptoms appear only after the disease is well established. Bulging of the eye-ball and widening of the palpebral slit is usually the first symptom to attract the notice of the patient. Exophthalmos has occurred in 23 per cent of the cases which have come under my observation. Failure of the upper lid to follow the eye-ball in its downward movement occurs in 8 per cent of cases; sluggish reaction of the pupil to accommodation is noted in 14 per cent; lack of, or imperfect convergence is seen in 12 per cent; and frequent winking in 14 per cent. Any one or all of these symptoms may occur before there is very noticeable exophthalmos. The presence of any of the eye-symptoms is suggestive and helpful in cases in which the diagnosis is doubtful. In connection with these statistics, several questions must occur to every thoughtful man. What causes the exophthalmos? There are many theories but few facts, and no explanation that is entirely convincing. Why are one or two characteristic eye-symptoms associated in one case and other characteristic symptoms lacking? Has this any significance or has it not? So far as I have been able to observe, the eye-symptoms are not associated with any degree of regularity. What is the significance of the eye-symptoms as regards the entire clinical picture? What, if anything, should we do about it?

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*Read by invitation ,at the annual meeting of the American Academy of Ophthalmology and Oto-Laryngol., Niagara Falls, August 20, 1912.

The disfigurement of extreme exophthalmos is the symptom which distresses many patients, especially young women, more than any other symptoms. The deformity is especially noticeable when it is unilateral, as has been the case with five of my patients.

Severe pain was complained of in only a few cases. Moderate pain is of frequent occurrence, being mentioned in about ten per cent of cases. Conjunctivitis is of common occurrence, but fortunately it is not very acute in the majority of cases. Small corneal ulcers are by no means infrequent and obstinate, bad ulcers injuring the eye have occurred in three of my cases. Exophthalmos, which is not extreme and not of long standing, almost invariably disappears after thyroidectomy. Extreme exophthalmos, especially if it has been present for a long time, is one of the most obstinate of the classical symptoms of goiter. About fifty per cent of my patients in whom the deformity was great, have been permanently relieved of the deformity through thyroidectomy. Where there is about equal bilateral enlargement of the thyroid and only one side is removed, the eye on the side operated on occasionally returns to normal, while the eye on the opposite remains quite prominent. This has occurred in four of my cases. In such cases symptoms have also persisted which seem to demand further reduction in the size of the gland, after which the prominent eye has gone back to match that of the opposite side.

In the treatment of exophthalmos, three operative procedures deserve mention. Resection of the superior ganglion of the cervical sympathetic, osteoplastic resection of the outer wall of the orbit, and the simple operation of tarsorraphy. Resection of the sympathetic ganglion has been very highly recommended by Jennesco and Jaboulay, but it has not come into general favor with the surgeons who have had the largest experience in the treatment of exophthalmic goiter. It is possible that benefit sometimes results from this procedure, but even the cuts illustrating the patient's condition before and after operation in certain of Jennesco's articles are not convincing. The operation certainly offers no special difficulties to the surgeon familiar with the surgery of the neck, but the results thus far do not encourage its recommendation in the average case. Kocher states that it has been abandoned.

Resection of the outer wall of the orbit, as first recommended by Kroenlein, offers the only prospect of relief in case there is bulging caused by a tumor back of the eye-ball. The incision used by Kroenlein is disfiguring, the danger of paralysis of important filaments of the facial nerve is great, the exposure of the posterior part of the orbit is not as satisfactory as can easily be secured by other incisions, and splintering of the frail bones about the orbit is certain to follow the use of a chisel in forming the osteoplastic flap as was originally shown. The incision recommended by Kocher has many advantages over the original of Kroenlein. In a recent article I have given the results of rather careful study of the anatomy and technic of this operation. By placing the incision in the eye-brow and the line of the wrinkles radiating from the outer canthus of the eye it is possible to avoid an ugly scar and injury to the facial nerve. Division of the angular process of the superior maxillary and the frontal bones by the use of the Gigli saw avoids shattering the bones, and gives a much more satisfactory exposure. Those interested in this subject I would refer to *The Journal of the American Medical Association,* 1912, Vol. LIX, page 989.

The simple operation of tarsorraphy is all that is needed considerably to relieve deformity and to prevent serious injury of the eye from exposure in a number of the less extreme cases of exophthalmos.

Occasionally failure of vision and temporary blindness occur as the result of pressure of a large goiter, as was very strikingly seen in a case operated on by my former associate, Dr. Prince. Turning the head to one side caused complete blindness, which was relieved immediately when the head was turned back; it was probably caused by interference with the circulation. Occasionally temporary blindness not caused by pressure is noted, being mentioned by two of my patients.

Ear symptoms are relatively very infrequent in my experience. Three of my patients have complained of very severe neuralgic pain in the ear. This was probably caused by pressure on the branches of the cervical plexus or the nerve-trunks forming it. During the operation of thyroidectomy under local anesthesia, the patients frequently complain of severe pain in the ear, when the upper pole of the gland is being isolated, the vessels clamped and tied; also frequently when clamps are applied to the sterno-hyoid and sterno-thyroid muscles, as they usually are before division in order to expose the gland. It has occurred to me that this pain might come from tension on the stylo-hyoid muscles and the stylo-hyoid ligament, which are in close relation to the Eustachian tube. Similar transitory pains in the ear have been noted by several of my patients. Partial deafness which has cleared up after operation was noted in one case.

Throat symptoms occur as the definite result of pressure in a very large majority of the cases that I have seen. A growth need not necessarily be very large to produce serious symptoms, provided it is located in the right place. The intra-thoracic and plunging goiters, compressing trachea and great vessels of the neck within the bony ring formed by the sternum and ribs in front and laterally, and the vertebrae behind, are most certain to cause trouble. In nearly one-third of my cases the growths have extended below the level of the clavicle, in many cases as far as it was possible to reach with the finger, and this considered, it seems remarkable that so few serious results of pressure occur. In a recent case a troublesome goiter the size of a large goose-egg was tethered just below the aperature of the thorax by elongated and tortuous superior thyroid vessels, and only appeared in the neck on swallowing. In another case a large growth was constricted and grooved deeply by the first rib, the surface protected by a well-developed bursa and the constriction, giving a somewhat dumb-bell shape. Both patients made satisfactory recoveries and have had entire relief. The origin of these forms of goiter is perhaps best explained by Kocher. A nodule developing in the inferior horn encounters less resistance to the surrounding parts when it grows downward behind the manubrium, may produce direct pressure on the trachea and marked dyspnea; more frequently it may grow behind the sterno-hyoid, sterno-thyroid and sterno-cleido-mastoid muscles, displacing the trachea backward and to the other side and extend in the opening of the thorax in the form of intra-thoracic goiter. The extension of such a tumor into the thorax is aided by two factors. In the first place, the thyroid gland moves downward during inspiration and is sucked into the thorax during deep inspiration; in the second place, the gland is forced into the thorax when the head is inclined forward. At first a deep goiter moves up and down with every inspiration, but when it extends underneath the first rib, having passed the narrowest portion of the thorax, it finds more room and the goiter continues to grow. A constriction is formed at the level of the upper opening of the thorax. When the goiter has reached this stage it no longer escapes from the thorax except during forced respiration, during deglutition and especially during cough, so-called *goitre plongcant,* diving or plunging goiter of the French. With the fluoroscope the tumor can be seen to rise during deglutition. A skiagraph shows a distinct shadow with a characteristic round border with convexity forward. An intra-thoracic goiter may attain enormous dimensions. It usually grows on one side, depending on the starting-point and rather more in front and to one side of the trachea, extending downward into the anterior mediastinum, where it is usually placed in front of, rarely behind, the innominate artery and arch of the aorta. The position is also determined by inspection and palpation.

With the diffuse forms, especially the soft, follicular and parenchymatous goiters, when the tumor is not large and the muscles of the neck are strongly developed, the patients are often unaware of the growth, and the functional symptoms, which chiefly attract attention, are referred to a great variety of causes and often treated accordingly. In cases in which it is difficult to feel the goiter, the examiner must never neglect to have the patient cough, as this renders the tumor much more distinctly visible and palpable. Diving and plunging (retro-sternal) goiter often can be seen or felt only when the patient coughs, and intra-thoracic tumors are often rendered much more distinctly palpable.

As Kocher states, dyspnea may be produced by pressure on the trachea; this is by far the most frequent form. It may be produced secondarily by pressure on the blood-vessels and consequent disturbance of the circulation; and by pressure on the recurrent nerve and paralysis of the laryngeal muscles, which is rare in ordinary goiter. It may be constant or paroxysmal and is increased by exertion; in the beginning it is present only during exertion but is increased with greater need of air. When the lumen of the trachea is greatly narrowed, especially when the pressure is circumscribed and unilateral, loud whistling inspiration and expiration result, the characteristic tracheal stridor. When the trachea is greatly constricted, certain positions of the head cause complete closure of the lumen of the trachea; sudden pressure from without or sudden exertion may produce attacks of asphyxia. This is particularly apt to occur when there is catarrh, which, owing to the diminution in the lumen of the trachea, is apt to become chronic.

In the examination of a goiter it is important to note the influence on the respiration of pressure applied to different portions of the tumor. In this way that portion of the goiter which exerts the greatest pressure can usually be recognized (Kocher). In the case of large goiters, which cause considerable displacement of the trachea, it is found that pressure on the sound side produces dyspnea of greater intensity, or brings it on more quickly than pressure on the diseased side. Sometimes very slight pressure on the sound side suffices to produce complete occlusion of the trachea. In such cases, swallowing the wrong way, an attack of violent cough, or a hemorrhage into the goiter may be followed by sudden death from asphyxia.

Another condition of great gravity and of interest to the laryngologist is the so-called saber trachea. The lumen of the trachea is frequently narrowed by compression between two enlarged lateral lobes, with resultant difficulty in breathing. A number of my patients and some of their medical advisers have called the trouble asthma. Extreme and long-continued bilateral pressure may cause absorption of the cartilage of the tracheal rings and collapse of the trachea when the compressing growth is removed. In case of intrathoracic growths with collapse of the trachea after removal, tracheotomy is of little avail. I have seen one death from collapse of the trachea. The difficulty is much more easily prevented by early thyroidectomy than treated after such a serious complication arises.

Hoarseness and persistent cough are very obstinate symptoms in a few cases. As regards the frequency of the special throat-symptoms, cough has been noted in three-fourths of my cases; the voice has been more or less affected in two-thirds; there has been some difficulty in swallowing in about one-third of the cases, and more or less serious choking in one-fourth of the cases. One patient of mine had coughed almost constantly night and day for several weeks and was in an extremely serious condition. By free use of bromids and opiates, it was possible to relieve her somewhat and put her in shape for ligation and the stage operation, after which she made satisfactory recovery. In several such cases a diagnosis of tuberculosis of the lung has been made by the attending physician. In one case, tuberculosis actually co-existed with the goiter, and now after a year of over-feeding and rest in the open air, the tuberculosis seems quiescent and the patient is planning to come for an excision of her goiter within a short time. In cases up to date, the persistent cough has been entirely relieved by the operative treatment of the goiter.

As regards the relation of goiter to the voice in a considerable number of patients, especially those who have good-sized goiters, it has been shown that there is paralysis of one vocal cord from pressure of the growth before operation. These patients may speak fairly well except when they are over-tired or have some inflammation. They will tell you that they formerly used to sing, but are now unable to do so; that after prolonged use of the voice they get hoarse or that when they have a bad cold they are hoarse or lose the voice entirely. This usually comes from pressure, but the decided general muscular weakness, from which almost all who have been long affected with exophthalmic goiter suffer, may effect the vocal cords and musculature of the larynx.

In simple goiter, injury to the recurrent nerve during operation, followed by permanent hoarseness is exceptional. Temporary hoarseness, on the other hand, is frequent, and as a rule comes from somewhat rough handling of trachea and larynx, unavoidable during operation.

Injuries of single fibers or branches of the recurrent laryngeal are rare also; the posterior crico-arytenoid muscle and inter-arytenoid muscle paralyses occur in isolated lesions of the posterior branch of the nerve, and are observed only in retro-tracheal goiter. Kocher states that paralysis produced by partial injury to the nerve causes a permanent hoarseness, while hoarseness due to unilateral total paralysis of the recurrent may disappear by the swinging over of the healthy vocal cord to the paralyzed side. Singing, however, is impossible in this condition. This restoration of the voice does not occur so long as the goiter, which is responsible for the paralysis, persists, but may occur after removal of the goiter, and also after a paralysis of the recurrent, caused by operation. Paralysis of the recurrent increases in already existing dyspnea, but in itself does not necessarily cause dyspnea unless posticus paralysis is produced. Whenever there are signs that the recurrent nerve is involved in a goiter, inflammation or malignant change should be suspected.

Injury to the recurrent nerve during operation is easily avoided in most cases by keeping away from the dangerous territory. The goiter is first isolated, except the deep part of the lower pole and the inner and posterior surfaces. The isthmus is then divided and the dissection carried down to the inner border of the trachea, the growth then hangs by a small portion of the capsule which is attached to the trachea along the inner and posterior surface. By dividing the capsule and separating the gland from the capsule of this small attached surface, injury to the nerve can be certainly avoided in the vast majority of cases. The nerve is in direct relation with the inner and posterior capsule; if this portion of the capsule is left intact the nerve will be uninjured, except in the case of deep-seated and intra-thoracic goiter, in which there is sometimes stretching of the nerve in bringing it up out of the cavity. In case of loss of voice after operation, it would be great comfort to the surgeon to know about the existence of paralysis of one cord previous to operation, on the diagnosis of a competent specialist.

As is well known by all interested in the subject, there is, in the embryo, thyroid tissue extending from the neck to the base of the tongue. In certain lower animals it always persists as the thyro-glossal duct, while in man it normally forms only a fibrous remnant. In fully one-fourth of my cases some remainder of the thyro-glossal duct can be seen in the neck. In a few, good-sized growths develop in it high in the neck. Enlargements of the lingual portion are exceptional, although an occasional growth has to be removed from the base of the tongue, and myxedema following removal of large lingual thyroid has been reported.

Medical and surgical results compared: A number of surgeons feel very strongly that surgical treatment should be advised for goiter patients much more frequently than is now the case. In order to come to any intelligent decision, we should have at hand definite facts with regard to the ultimate results of both medical and surgical treatment. Unfortunately, few internists have furnished facts regarding the ultimate outcome of patients who have been under their care. The only definite figures which have come to my notice are those reported by Kuttner, who was able to get information regarding the late results in twenty-one cases conservatively treated at the Breslau Clinics during eighteen years. Two died under medical treatment in the clinic; three who had been medically treated died later of heart failure. The total mortality in these conservatively medically treated patients followed for fifteen years proved to be 35.7 per cent, a figure as high as the worst results of surgical treatment in the hands of inexperienced operators. Of the survivors, not a single patient considered herself cured, and only one was able to follow her usual occupation; of the remainder a few were simply only improved, while a large portion were very much worse than when their treatment was first instituted. It would be very interesting and a highly important contribution if some of our own internists would follow up their cases and give us the ultimate outcome as has been done by Kuttner.

I have personal knowledge of eighteen medical deaths from goiter, a number nearly three times as great as my total fatalities during the past seven years, in which the great majority of my cases have been operated on. In recent years the results of surgeons who have had considerable experience has greatly improved, and the number of fatalities under medical treatment of which I have knowledge is greater than the total number of fatalities from the clinics of Kocher, Crile and myself during the past three years. At first sight this is a pretty bad showing for medical treatment of goiter, but it is quite possible that some of our progressive men could show much more encouraging results. We all await with much interest the reports of their ultimate results.

Permanent results: In order to get definite information about the ultimate results in operation for goiter, I have selected from my card-index of patients' addresses, 100 names of patients, most of whom live not far distant from Ithaca, and from all of whom I have been able to get very reliable information as to their present condition. There was no intentional selection of these names, except to take as large a proportion as possible of those who could be actually examined. Nearly one-half of my patients I have seen personally; most of them several times following the operation. Two of these patients died, one a few months after operation from apoplexy, another three years after operation from pneumonia. Both of these patients were in good condition as far as their recovery from the goiter operation was concerned. Of most of the patients who have not been examined by me or my assistants personally, I have received reports from physicians whom I know personally and whose opinion I consider reliable. In a few cases I have only succeeded in getting information by letter. With the exception of the two deaths mentioned, all are living from two to nine years after operation. None of these patients are worse than before the operation; all have been either greatly benefited or entirely cured. All of them are able to follow their usual occupations, and three have stated that they were in better health than at any previous time during their lives.

It is very certain that a very large number of goiter-patients first consult a specialist; sometimes the eye specialist for symptoms which the patient does not recognize as being in connection with the thyroid, more frequently, probably, the laryngologist for throat symptoms. In a large proportion of these cases the patient will need a partial thyroidectomy before recovery is effected. I believe that the operation is best performed in the vast majority of cases by the general surgeon experienced in the surgery of the neck. The preliminary examinations of many of these patients to determine whether the vocal cords are affected, the treatment of corneal ulcers and refractive errors should certainly come under the care of the specialist. Co-operation between the specialist and the general surgeon is certain to be of the greatest value to the patient.

The importance of early thyroidectomy can scarcely be exaggerated. By early operation, disfiguring exophthalmos with the attendant risks of ulcer and perforation can surely be prevented, the growth can be much more safely removed, the contour of the neck will not be affected by displacement and pressure on the muscles. and of greatest importance, the risk of life will be reduced to a minimum. In uncomplicated cases the risk should not exceed that of the interval operation for appendicitis. It is true that a certain number of these patients exist as nervous wrecks for a good many years. It is equally certain that most of these patients could be made useful members of society and a considerable number of deaths avoided by early thyroidectomy.

105 North Aurora Street.

AN ENDOSCOPIC SYRINGE.

DR. CHEVALIER JACKSON, PITTSBURGH.

For the endoscopic injection of solutions of radium salts into malignant neoplasms, the syringe illustrated below has proved very satisfactory. It is made in a 30 cm. length for use through the direct laryngoscope, 60 cm. for bronchoscopic and esophagoscopic use. The capacity is 25 milligrams, though it can be made for larger quantities of solution if desired.

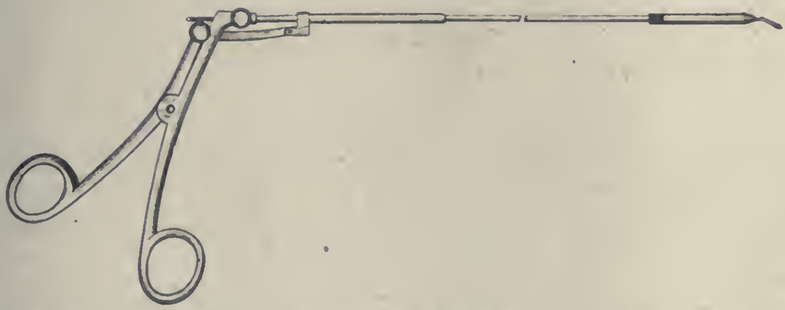

Figure 1. An endoscopic syringe for the injection of radium salts into malignant neoplasms in the larynx, trachea, bronchi, esophagus or stomach.

Westinghouse Building.

AN IMPROVED AUDIOMETER.

DR. HAROLD HAYS, NEW YORK CITY.

Recognizing the difficulty which besets most otologists in the accurate testing of hearing in those cases where the watch and an ordinary tuning-fork are used, I have recently devised the instrument here described, which I hope will prove of a great deal of value.

The otologist, in his practice, depends upon the inaccurate method of watch-testing by moving the watch away from the patient's ear and guessing at the approximate distance. The variation from day to day may be as great as six to eight inches even when the most pains-taking care is used. It seemed to me that it would be advisable to devise an instrument whereby one could test so accurately that the hearing distance of the patient would vary less than half a centimeter. With this instrument such can be accomplished.

Again, our tests with the tuning-fork are grossly inaccurate. We use the tuning-fork by striking it against the knee or some other object. Whether the intensity of the vibration is great or small varies with the strength that is used in striking. Various mechanical hammers have been tried, but these also depend more or less upon the rapidity or intensity of the individual stroke. By mounting a tuning-fork on a standard base and having a certain definite mechanical hammer which cannot be changed this one difficulty can be overcome. This also, I believe, has been attained in this new audiometer.

The instrument can be described briefly as follows: It is well illustrated in the accompanying pictures. At right angles to a telescopic stand is mounted a scale, marked off in centimeters, about thirty-six centimeters in length. Along the upper part of this scale, on a ratchet, runs the recording instrument. By pressing the spring at the uppermost portion of the stand, the scale can be brought down parallel to it, so as to take up no unnecessary space (Figure 1).

The recording instrument which is mounted on the scale, contains two openings in a wooden cap, one for a stop-watch and the other for the tuning-fork. By moving the outer cog-wheel the instrument can be slid along the rachet and the hearing by the watch accurately measured.

For the watch-test the watch is inserted as in Figure 2, the watch first being placed against the patient's ear. An assistant holds the patient's head steady. The patient's eyes are closed and the watch is moved away from the ear silently until it can no longer be heard. The variation may be as great as five to six inches. The final point is reached when the variation is less than half a centimeter. This is recorded on the scale and marked down for future reference.

The watch is then removed and in the second opening a tuning-fork (preferably a 512 or 1024 fork) is inserted and the mechanical hammer which is telescopically arranged can be moved up or down so that one can place it in the proper position. The fork is then placed as near to the ear as possible and with the stop-watch in the physician's hand, the hammer is retracted by means of a spiral spring at its base by turning the second or inner cog-wheel to the right until it automatically springs against the tuning-fork. The watch is then pressed and allowed to run until the patient does not hear the fork and the time recorded in seconds. We then have two accurate measurements which can be graphically described in a fraction, the numerator being the watch distance in centimeters, the denominator the number of seconds the tuning-fork was heard.

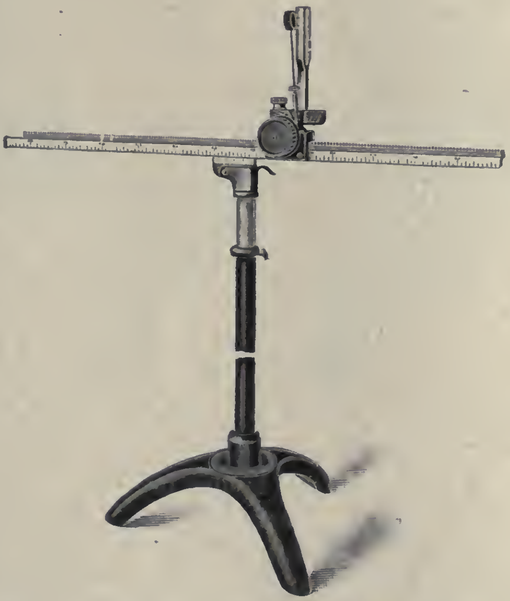

Figure 1. Dr. Harold Hays' improved audiometer.

For example, a patient hears the watch at 10 centimeters and hears the tuning-fork for 55 seconds. The hearing can be expressed thus: Hearing A. D.=10/55.

Of course, an instrument such as this is merely comparative, and its value lies chiefly in having an accurate test for individual hearing which can be measured day by day or week by week. No two instruments, no two tuning-forks, no two watches, will ever be alike, so that there is no value in comparing the hearing of an individual patient when a test is taken with two different instruments, and by two different men with different watches and tuning-forks.

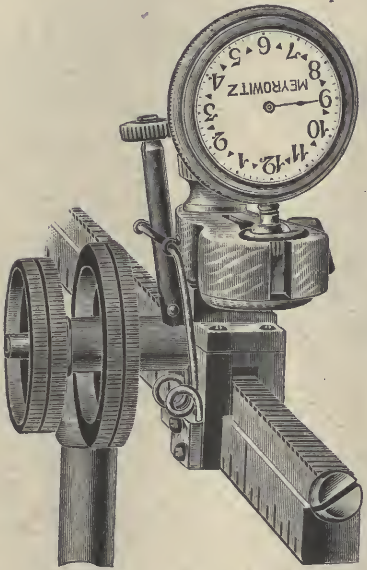

Figure 2. Audiometer with watch in place.

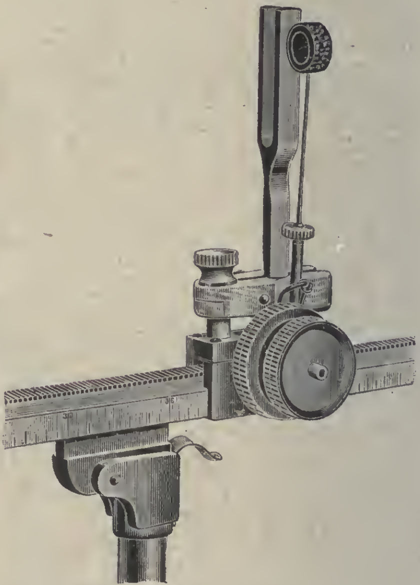

Figure 3. Audiometer with tuning-fork in place.

11 West Eighty-first Street.

Emergency Tracheotomy. A. Denker, *Med. Klinik,* Jan. 5, 1913.

Denker discusses the new procedure of inter-crico-thyrotomy as a substitute for crico-tracheotomy and describes the necessary instruments. According to the author's experience, the procedure is simple and safe and may prove of vital advantage in many operations.
Ed.

EDITORIAL DEPARTMENT

THE DEAF

Their Education—Improvement of Conditions—Responsibilities and Participation of the Profession.

JOHN DUTTON WRIGHT, M. A.
DIRECTOR OF THE WRIGHT ORAL SCHOOL FOR THE DEAF
NEW YORK CITY

The aim of this department of THE LARYNGOSCOPE will be to bring to the notice of its readers from month to month, facts that may be helpful to physician and patient in dealing with the life-problems involved in deafness. Suggestions from readers will be gladly received and all questions answered to the best of our ability.

The meeting of the German Scientific Society held in New York, in April, was given up entirely to the subject of the oral education of the deaf by the German or speech-method. The principal address of the evening was given in German by Dr. Otto Glogau, an otologist of New York City. Dr. Glogau reviewed briefly the history of deaf-mute education in the United States. The early introduction of silent methods and the later entrance of the speech-method. He emphasized the need of classification of deaf children according to degree of deafness, time of life when it occurred, and degree of mentality. He urged a more careful examination of all pupils by the Bezold continuous tone-system, and advised America to follow Germany in the establishment of special "hearing classes" in ordinary public schools, for such pupils as cannot understand whispered speech at a distance of one meter.

The deaf child of normal mentality should be instructed early at home by its mother. Between the age of three and six it should come to the kindergartens for the deaf. He said that the education of the deaf is a problem no more. Its solution was found by German teachers. Oral instruction by speech- and lip-reading will conquer the world for the deaf-mute, and that term will become a misnomer. But the public must be educated, and especially the mothers, as no mother can be sure that she may not have to bring up a deaf child. But before all, the physician must wake up, and instead of assuring the unhappy parents that later the child will hear and speak, he should direct them to a teacher who can give it oral instruction by the speech-method, in order that precious time may not be lost, whatever the event may be. The specialist in otology should pay more attention to the fact that he is dealing with an otherwise normal child and not merely with a defective ear.

Special stress was put upon the desirability of paying greater attention in the institutions for the deaf to the residual hearing possessed by many of the pupils. The trouble is that the training and developing of residual hearing requires more individual attention than is possible under the present organization of the institutions.

I had the privilege of opening the discussion of Dr. Glogau's address. The points that we strove to have the audience grasp and carry away with them were that:

1. The little deaf child should begin its education by the speech method not later than five years of age.

2. The child that is made deaf by illness or accident should at once be placed under the care of a trained and experienced teacher of the speech-method. The necessity for prompt measures in such cases cannot be urged too strongly; without immediate and skillful attention the child who has learned to speak before becoming deaf will lose that speech. But if prompt and intelligent attention be given, the child's speech can be retained, lip-reading can be learned, and education can go on without interruption.

3. A very large number of pupils in our public schools are struggling along with defective hearing in the regular classes of forty or fifty with a single teacher. They should have special attention given them in small groups of fifteen or twenty. Examination of the more than half a million pupils in the public schools of New York City revealed the fact that one in each hundred has sufficiently defective hearing to be seriously handicapped in the regular work of the school. Yet these pupils are in no sense candidates for an institution for the deaf. They do not belong there and should not be sent there. Most of our public school buildings in this city contain about 2,000 pupils. There are among these 2,000, twenty pupils whose education should receive more special and personal attention than is possible when one teacher is responsible for forty or more pupils.

4. There is the very large number of adults who have grown more or less deaf after maturity. These people should be encouraged to form the habit of constantly watching the lips of those

addressing them, and taught to supplement their imperfect hearing by the use of their eyes in speech-reading.

But the most interesting and impressive part of the meeting was the demonstration supplied by three of my former pupils, Miss Helen Keller, Mrs. Kate Graham McGinnis and Mr. Horace R. Moorhead.

Miss Keller spoke in German for twenty minutes and then for fifteen minutes in English. Mrs. McGinnis and Mr. Moorhead carried on a conversation with me and replied to questions put to them by the audience.

Most of the 700 people present were equally familiar with both German and English, and later in the social part of the meeting many persons from all parts of the audience reported that they were able to understand Miss Keller, Mrs. McGinnis and Mr. Moorhead, whether German or English was spoken.

A physician sitting on the platform asked Mrs. McGinnis if she was interested in the suffrage question, and an amusing discussion sprang up between Mrs. McGinnis and Miss Keller. They proved to be on opposite sides of the question. Mr. Moorhead also made quick and witty replies to questions put to him by members of the audience, and won both laughter and applause.

The audience was deeply impressed and many members said the meeting was one of the most memorable since the founding of the Society in 1870. Such occasions cannot fail to do much for the cause of oral education in this country.

Vaccine Therapy of Whooping-Cough. A. BAMBERGER, *Am. Jour. Dis. of Children*, Jan., 1913, p. 33.

Bamberger used the vaccine (prepared from deep swabbings of the throats of children having pertussis) in six cases ranging from 1 to 4 years. He had no constitutional reactions. The treatment seems rather to lessen the severity of the disease and abort complications than to shorten markedly the duration. However, only two cases lasted as long as six weeks. ED.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular Meeting, February 26, 1913.

JOHN F. McCOY, CHAIRMAN.

DISCUSSION OF DR. MILLER'S PAPER.

(*Continued from page 795*).

DR. McCOY said that Dr. Miller had very kindly included him among the laryngologists whose opinion was asked. He felt that his work was principally to correct pathological conditions of the nose and throat affecting the larynx. He recalled the fact that a number of singers who had consulted him had very marked deviations of the septum, and after the conditions were relieved they said that a blanket seemed to have been removed from the resonance of the voice and that they could sing more clearly. On the other hand, he cited the case of a concert singer who had a very good voice with a very marked deviation of the septum. He had tried to convince this patient that his voice might be improved if the condition were corrected, but he claimed that he was doing so well as it was that he preferred to let well enough alone. There would seem to be some compensation by nature in the singing mechanism as well as other parts of the body.

DR. QUINLAN said that he had come to the meeting to listen with no idea of participating, but had been much entertained and instructed by the splendid cast presented to the section. Dr. Miller possessed peculiar facilities for this line of work, being both a musician and a laryngologist; he had been able to bring out some points that would be impossible for the ordinary observer. His education as a singer had been supplemented by his medical art, and that had enabled him to make the splendid demonstration that he had presented. It was a rare privilege to hear Miss Keller, and many persons with perfect vocal organs do not speak nor sing as beautifully as the young lady who has entertained us with her song and speech.

In his experience he has seen many singers with many defects of the upper air tract who had, notwithstanding, been able to sing in a most harmonious manner. Nature gives inherent forces which enable them to overcome many of these defects, whether enlarged tonsils, deviated septa, etc. In spite of these defects, nature compensates, and with mental and moral forces, enables such persons to overcome apparent obstacles, rendering possible such splendid results as have been shown to-night. One singer to whom he had made reference had a luxation of the arytenoids, yet this man had a sonorous voice which would echo and reverberate through the largest halls in the country.

Miss Keller was a most remarkable exemplification of what could be accomplished by one without sight or hearing, but with courage and patience and proper teaching, this last factor playing the great essential on the road of success.

Dr. Harris Taylor: It is very fitting that we should have had both Dr. Scripture and Dr. White to discuss this matter of pitch. You notice that what Dr. Scripture complained of, the defect of the voice of the deaf, was what Dr. White found to criticise in Miss Keller, the lack of control of pitch and flexibility of voice. I think I am in a position to pass an opinion in regard to some phases of the work that has been done with Miss Keller. I remember her voice very distinctly, though until a few months ago I had not heard it for a number of years, and I think I should be able to notice changes in her voice which those who have been constantly with her may not have noticed, and the improvements that have been mentioned I think have actually been made. Some of you who are not acquainted with the deaf might infer that nothing had been done for Miss Keller until our friend from Boston took her in hand; but those who have had much to do with the teaching of the deaf would think that a great deal had been done for Miss Keller before he took her in hand. That is no discredit to him. We can still give him a great deal of credit for what he has accomplished, and still ascribe much honor to the woman who so well taught her under circumstances and disadvantages which you can hardly comprehend, unless you have been thrown with those who have always been deaf or who never learned to speak before they became deaf.

The instrument or apparatus shown by Dr. Scripture has been used with some of the pupils of the school with which I am connected. This and other forms of apparatus have proved effective in showing the children what their pitch was, and through these instruments they have been able to make corrections. There is no question but that the continuous use of these methods will enable us to go a long way toward establishing that which is of the very greatest importance in teaching speech to the deaf, a muscular memory of the vocal organs; therein lies the greatest success. We speak without any knowledge of what we do when we make a sound; if the deaf are ever able to be taught to speak well, they must be made to remember what they do when they produce a certain sound, and to the extent that a muscular memory is acquired to that extent their speech will develop, and when that is developed their speech is practically perfect.

What Dr. Scripture says can be done, and they can be taught to use the singing tone. If they can be taught to go from the dead, level, monotonous, foggy tone to one that has the enlivening features of pitch and difference in the length of the vowels it would add not only to the intelligence, but to the pleasure of hearing. Dr. Scripture has shown that it is practical and effective, and I feel that much may come from the line of experiments that he is now making with the deaf in our city.

The Chairman said that at the request of several of the members, Miss Keller had kindly consented to say a few words.

Miss Helen Keller: I have not much to say. I am not prepared to talk to scientific men. I am on my way to Washington to take part in the Woman Suffrage demonstration. But I cannot resist the temptation to give you a little advice. This is too good an opportunity to lose. I may never have such a chance again.

When the physician fails to save the organ of hearing, he should do everything he can to save the child from the disaster of deafness. You and I know that lack of speech is the greatest loss caused by deafness. It is an immense burden added to the many great burdens which the deaf child must carry through life. Every aural surgeon should cooperate with the school-teacher in his efforts to pour the waters of speech into the desert of dumbness. Every aural surgeon should tell the parents and friends of the deaf child that he can learn to speak, that the sooner he learns the better will be his chance to speak well. There is another thing that surgeons and specialists can do. They can insist that all teachers of the deaf shall be qualified to teach speech. Many persons who are engaged in teaching little children to speak do not seem to know a larynx from a hole in the wall! Dr. Simpson says, it is important that teachers of singing should know something about the organs of speech. Surely, it is very important that teachers of the deaf should know a great deal about them.

The only way to help the deaf child at all is to help him immediately and in the right way. I understand that doctors often recommend useless remedies because they shrink from the painful duty of telling parents and friends that the condition of their patient is hopeless. Such kindness is expensive. It would be much better to help the patient and his friends, to prepare him for the new conditions under which he must henceforth live.

I was 6 years old before any physician was brave enough to tell my sorrowing parents my true condition. It was a Dr. Chisholm, of Baltimore, who told them that I should never see nor hear. But he said I could be taught, and he advised them to consult Dr. Alexander Graham Bell, as to the best method of having me educated. So from that intelligent doctor's office I passed from darkness and isolation to light, joy and love.

Dr. Seymour Oppenheimer said that all recognize the accessory nasal cavities of the head as resonating chambers, and that in the present enthusiasm for operating intra-nasally or otherwise for accessory sinus disease, we frequently have occasion to make large openings into the accessory nasal cavities. Dr. Miller had doubtless seen many individuals who had been subjected to these operations, and he would like very much to have him state what influence he has observed such operations have had on the singing voice.

Dr. Miller: I thank you for the kindness and attention which you have given this subject. In three conventions before which I have appeared, although in one instance I presented twenty-three patients, they were absolutely passed by without attention. I placed them there for advice, I wanted to know myself, and I concluded that it was that I had said too much in the papers that I had read and that I had not made statements which I could verify. To-night, I am overwhelmed with gratitude at what has been spoken and sung, and by those present that have spoken in behalf of this subject, for my heart is thoroughly interwoven with this subject, "Vocal art science."

In regard to the subject which Dr. Oppenheimer mentioned, I was just about to place a paper on the desk of Dr. Carter, asking Dr. Oppenheimer at what age he thought the sinuses were developed for phonetic importance. Children begin to speak at 2, we say. At 4 they do better, perhaps sing. At 7, they really have some fundamental voice. At about that age the accessory sinuses have some important function and phonetic value. If we take Dr. Tuft's law of the passage of vibration through substance, for instance, the well-known experiment of the bell within the sealed zinc cube, which is thrown into the air, the bell moves, but we hear no sound. Puncturing it with a needle or with a small piece of steel and straightway, if you throw it in the air, you will hear it. That proves that sound is transmitted by porosity and elasticity. Our accessory cavities are connected by the sinuses. Through the sinus must pass the vibration. Therefore, in the accessory sinus must be another phonetic value. In regard to this one subject, I will say that I have now three singers who have had both middle turbinated bones removed for good cause, for painful conditions in the surrounding sinuses, and those who have had their middle turbinated bones removed, have had a G, thoroughly well developed, much more so than before. The B-flat above that has also been wonderfully developed both as a fundamental and overtone. We would say that their middle turbinated bone, being removed, gave another quality of tone to the detonation that impinged upon the superior turbinated bone, and the space occupied by a diseased turbinated bone had been cleaned and freed by the removal of the diseased middle turbinated bone, when it was hypertrophied and thickened by means of the secretions that came down from the accessory sinuses. It would then have been an interference with the vocal mechanism, now it improves and furnishes extra powers to the resonator above. That is the way that I have been compelled to look at it.

Another thing sometimes occurs, that where the middle turbinated bone is removed for just cause on one side we will notice that the palate and front of the mechanisms concerned in the regulation of the various cavities concerned in phonation take on different arrangements and positions of adjustments to satisfy the laws of new resonance demanded by the removal or inflammation causing changes of space. This change is automatic to a great degree. As to what Professor Simpson asked, with reference to automatic action when the accessory sinuses were distorted, I will say, that you will find by observing the side of the vocal mechanism diseased or injured, commencing with the side of the nose, that it will first be relaxed by shock, then contracted to make up for the lost function in the making of resonance; the palate and tongue will be likewise affected and the side of the throat will seem at first to be in a state of paralysis and then in a state of contraction. Mr. Lorenzen is a remarkable example of that,—the whole side of his palate. Even now there is a retraction there, and I have seen the same thing in several other singers.

Our node question has not been spoken of to-night. There is a sample of that, too, I believe, many times. We find that the tonsil has a deposit, for in every case of the node that I have seen there has been a deposit in tonsils—not that they have caused it, but I have noticed it and I believe that by causing inflammatory extensions and muscular disability, relaxation of the side of the larynx occurs at first. There the chord bulges and by attrition forms a node and sometimes the double node. In that way, even the turbinates and the tonsils may have a relating influence upon the vocal mechanism.

In conclusion, I want to say that in like manner the secretion from the sphenoid, for instance, which passes down on the posterior wall of the pharynx, create a difficult action in the palate and in the other muscles lying below and they, of course, will modify our tone. It will change the articulation, also the overtone quality in our registering resonator; they are all wet resonators, and any altered condition of that resonator changes voice values. All these change the character, the quickness of the movement of that resonator, also the fundamental tone which, made by the chord itself, will have to make corresponding accommodations and change phonetic results.

New Apparatus. Dr. E. W. Scripture.

Dr. Scripture demonstrated an apparatus by which persons totally deaf can be taught to sing three or four notes within an octave.

The apparatus consisted of two flame boxes, one of which is connected to an organ. When a note is played on the organ, the flame vibrates. When observed in a revolving mirror the vibrations become visible. A low tone produces a coarse vibration, a high tone a fine vibration. The patient sings into the flame box, and his vibrations are likewise observed in a revolving mirror. He learns to match his flames to those from the organ, and in this way to sing notes of different pitch.

In learning to sing he is taught to run his voice up and down within words as he speaks. He thus acquires a melodious manner of speaking. His voice is thus made very different from the usual monotonous and misplaced voices of the totally deaf. By this means one of the great defects of the modern system of lip-reading is removed.

DISCUSSION.

Mr. Charles A. White: This instrument which Dr. Scripture has exhibited is valuable in teaching tone and pitch to the deaf. I have found two conditions of voice in the deaf, the same with singing pupils, only in a lesser degree, one of over-tensed muscles; the other, over-relaxed. These conditions would have to be adjusted to match the flame and would incidentally bring vocal adjustment and control of pitch in reproducing the given tone, while at the same time the practice would help to develop voice.

Pernicious Anemia With Changes in the Mucosa. Matthes, *Med. Klinik,* No. 9, 1913.

In these three cases of pernicious anemia the form of glottitis described by Hunter was present. The affected areas of the tongue looked like blisters and were sensitive to pressure; histological examination revealed a thinned epithelium with small-celled infiltrations.

Ed.

PHILADELPHIA LARYNGOLOGICAL SOCIETY.

Regular Meeting, December 17, 1912.

DR. ROSS HALL SKELLERN, CHAIRMAN.

Permanent Diplopia Following Killian Operation on the Frontal Sinus.

DR. ROSS HALL SKILLERN.

Demonstration of three patients:

Case 1: I. K. M., operated on April, 1911. Diplopia appeared three weeks after operation due to interference with action of the trochlea. Diplopia gradually disappearing.

Case 2: B. S., operated on June, 1912. Diplopia immediately after operation. Both unilateral and bilateral. Unilateral condition cleared up in a few weeks. Bilateral diplopia persisting. Under adjusting glasses the condition is gradually improving.

Case 3: M. D., operated July, 1912. Diplopia appeared six weeks after operation due to interference with the action of the superior oblique. The wound immediately above and below the bridge of the internal angle of the wound became infected during convalescence and suppurated. Healing occurred by second intention. Considerable deformity exists owing to the contraction of the scar tissue in this locality. The diplopia in this case is undoubtedly due to the muscle being caught and bound down in the cicatrix.

DISCUSSION.

DR. J. NORMAN RISLEY, (Ophthalmological aspects): I have thought it surprising that a permanent diplopia was not more often the result as one of the sequellae of the radical operation of the accessory sinuses as advocated by Dr. Killian, since in order to secure the desired result it necessitates such extensive destructions of the anatomical relations of the trochlea and pulley of the tendon of the superior oblique muscle. That this complication does not more often occur I think is due to establishment of a compensatory action of the other extrinsic ocular muscle or that a reattachment of the pulley near its original site is secured by cicatricial contraction of the newly formed connective tissue. I have had the opportunity of observing only one of the cases reported by Dr. Skillern, which proved of exceptional interest, since there was not only the organic diplopia secondary to the operation, but in addition a vertical monocular diplopia of the left eye, which after careful study could be ascribed only to a functional derangement, as none of the acknowledged pathological conditions producing this phenomenon were discoverable There were no pathological changes to be seen in either eye, and only a low degree of simple hypermetrophic astigmatism present. In spite of this the visual acuity was reduced to 5/IX in each eye, but rose to normal with suitable glasses, though with frequent relapses. The amount of the organic diplopia varied from day to day from 2½ degrees to 18 of left hyperphoria, as demonstrated by the aid of the maddox rod and point of light at six meters, while the cover test was constant, all movement being corrected by a 11° prism base down over the left eye. The relation of the double images was always typical of a palsy of the superior oblique muscle. The visual fields showed the interlacing for colors, so often seen in hysteria. The diplopia was noticed first by the patient immediately upon the removal of the bandage forty-eight hours after the operations and has persisted constantly since that time. The monocular diplopia was manifest to the patient only when the right eye was closed, though demonstrable with both eyes open with the aid of a ruby glass or maddox rod placed before the left eye and a point of light at six meters. With the maddox rod she saw two horizontal lines of light below the point of light. I saw the patient first in August, 1912, about one month following the operation, when she came seeking relief for the double vision which incapacitated her for work at the loom. She gave a history of continuous headache for the past six years until relieved by Dr. Skillern's operation and presented the typical picture so often seen in that class of women who have passed their years of early development in the bad hygienic surroundings of a large textile mill with long hours of constant labor and insufficient nourishment. She had been referred to Dr. Skillern by a friend upon whom he had operated for the same condition some time previously and who also had a persistent diplopia. It is not surprising, therefore, that this girl in her poorly nourished condition and with her nervous system at the high tension it must have been with a continuous pain for six years, should be in that mental state where a suggested symptom would take deep root. After careful correction of her refractive error under prolonged mydriasis, two months treatment under general tonics, rest and regulated diet, the monocular diplopia disappeared, there was a gain in weight and as stated by the patient a diminution in the degree of the organic diplopia, although at her last visit on November 29, examination showed the same amount.

Dr. H. Maxwell Langdon: (Ophthalmological Aspect): I have been especially interested in studying the involvement of the ocular muscles in these three cases since they are the first I have had an opportunity to examine, and I sincerely appreciate Dr. Skillern's kindness in letting me see them.

The first case, S. McS. shows a diplopia significant of a paresis of the left superior oblique muscle, but not absolutely typical, probably because the nineteen months which have elapsed since the operation have allowed the inferior rectus to cover up some of the deficiency. The image of the left eye is below that of the right, about fourteen degrees, the diplopia is homonymous, and the images are slightly more separated on looking down and to the right than they are in other parts of the field of fixation, without doubt a superior oblique involvement.

The second case, B. S., also a left-sided operation, has a typical superior oblique diplopia, the image of the left eye being always below, the separation increasing greatly in the lower field, especially on looking down, and to the right. Before I saw her, as Dr. Risley has already said, she also claimed a monocular diplopia of the left eye, which was present on her first examination after the operation; she had complained of diplopia on coming out of the ether. I think this monocular diplopia must have been entirely functional; it has disappeared as mysteriously as it came, the usual organic changes which may be responsible for a monocular diplopia are absent, there is no dislocation of the lens, no partial absorbtion of the cortex, which might have allowed the muscles to tilt, and spasm of the ciliary muscle was ruled out by the atropin instilled for refraction. The patient had been told that she might see double and I think she was making sure that there was no lack of diplopia by not only seeing double with both eyes, but by seeing double with the eye of the operated side.

The third case, M. R., has a very unexpected diplopia, which has come on only a long time after the operation. When I heard the history I supposed that the contraction of the unusual amount of scar-tissue present had caught the trochlea and was interfering with the action of the superior oblique but to my surprise the superior oblique is quite active and the diplopia is a crossed one, with the images level and apparent only in the extreme left portion of the field of fixation, and as much above as below, typical of a deficiency of the left external rectus, but undoubtedly due to a contraction of the tissue around the inner canthus caught in the scar and presenting a complete relaxation of the internal rectus or the parts immediately around it. This condition is the result of an unusual complication of the operation and need not be further considered.

Undoubtedly the muscle most likely to be affected in the radical operation on the frontal sinus is the superior oblique, since a necessary step in the performance of the operation is the separation of the periosteum including the trochlea from the inner wall of the orbit. That this important structure in preserving ocular equilibrium is always accurately replaced seems to me to be doubtful; that it is usually approximately returned to its former position seems likely in view of the few cases having a permanent diplopia after the operation. I believe, however, that many cases will show for a few days, or a few weeks after the operation, a deficiency of superior oblique action if properly searched for in the lower portion of the field of fixation, and with the images of the two eyes so differentiated as to render fusion unlikely, for it must be remembered that if the images are similar and not greatly separated the fusion sense will in many cases cover up the deficiency. Dr. Skillern has promised to let me see his cases before and after operation and a search for such conditions will be made.

Dr. Geo. M. Coates: These frontal sinus radical operations are always of interest, not only on account of the improved results that sometimes occur, but also for the excellent results frequently obtained, which are well illustrated in the three cases presented to-night by Dr. Skillern. In two of them the cosmetic result is perfect, and in the third, we must remember that the presence of a very large sinus must necessarily leave a depression, as is shown here. Why we do not have more permanent diplopia has always been somewhat of a mystery to me when we consider that the attachment of the superior oblique muscle of the eye is destroyed, and even when it is replaced in about exactly its original position, I should think that there would be some slight change in the muscular action, sufficient to cause diplopia. However, it is of comparatively rare occurrence, the only case I have had personally being one in which the eye-ball was in bad condition due to an orbital abscess previous to operation. This diplopia has persisted to a certain degree.

Demonstration of the New Kahler Bronchoscope With Indications for its Uses. DR. CHARLES A. O'REILLY

DIRECT LARYNGOSCOPY.

Anesthesia by means of the Marschik laryngeal syringe. The end is wound with a pledget of cotton, and the barrel filled with a solution of cocain twenty per cent and adrenalin, in the proportion of 10 to one. With the laryngeal mirror the application is made to the laryngeal surface of the epiglottis and the vocal cords.

There are three applications made, and there should be an interval of from two or three minutes permitted between each application. Caution the patient that after the first application there will be a sensation of smothering or choking, which, however, will shortly pass away. In direct tracheo-bronchoscopy, after the operator has passed the vocal cords, there should be introduced through the tube of the bronchoscope a spraying tube, and the larynx and the lower trachea anesthestized with ten per cent solution of cocain and adrenalin. In children under 10 years of age or in a very nervous anemic or emiated person general anesthesia should be used.

Examinations. There are two varieties of spatulas for use in the adult. They are 15 cm. in length, one 14 mm. wide, the other 11 mm. For the typical examination, the spatula of 11 mm. is the preferable one. The spatula is in the shape of a tube for one-third of its upper portion. The middle third of the tube is open like a channel, but the edges of it are sufficiently raised to prevent the tube when pressed against the tongue from obscuring the field of vision. The lower third is much flattened and has a sloping end. The spatula affords a field of vision twice as great as the closed tubes without causing the patient any great inconvenience.

After the patient has removed his collar and any obstructing articles of clothing or false teeth, he should be placed on a stool 20 to 30 cm. in height. An assistant should stand behind and support the patient's head, and upper part of the body in the requisite position. The spatula should should be fitted to the electroscope, and the mirror should be warmed over an alcohol lamp, the spatula being anointed with pure sterilized glycerin. The process may be divided into three steps: 1. Bringing into view the lingual surface of the epiglottis. 2. Passing beyond the epiglottis and pushing it aside. 3. Pushing the tube deeper, possibly through the vocal cords into the larynx.

1. The patient should bend his head back very little, the surgeon introducing the spatula exactly in the median line, not too vertically, so that when the tongue is depressed the upper edge of the epiglottis comes into view. It is most important through all of these steps that the examining surgeon's eye should remain at all times over the slit in the electroscopic mirror. After the free edge of the epiglottis has been brought into view the end of the spatula should be slightly raised and passed over the epiglottis to the median line.

2. The patient's head should now be held back a good deal more. At the same time while keeping in the middle line, the surgeon should exert powerful pressure in a forward direction on the root of the tongue, but should not allow the tube, which is resting in the angle between the thumb and forefinger, to move in any deeper. It is very advisable during

this procedure to have the patient utter a continuous sound. This not only diminishes the tendency to pressure but also renders orientation much easier. The arytenoid cartilages now enter the field of vision, the posterior commissure, the vocal cords, and the anterior commissure. If at this time there is a doubt the surgeon should at once remove the tube and begin a fresh passing of the tube.

3. This, as I have said before, is merely a pushing of the tube deeper into the larynx. Have the patient's teeth properly protected with a good size pledget of cotton.

Some mistakes that may occur: 1. Improper anesthetization. 2. Excitement or fear on the part of the patient. He should be told that at the worst he will feel an unpleasant, but quite bearable pressure on the tongue, and that he must go on breathing quietly and regularly. In very difficult cases it is well at the first sitting to be content with a view of the arytenoid region, and to proceed with repeated examinations before going deeper into the larynx.

3. The patient must be told not to bend his head back rigidly, but should let it be in an easy and natural position. Do not let the patient slip forward on the seat, and then take up a position with the body inclining backward. In this position examination is almost impossible. The patient's position should be a straight one, with the back slightly curved. The surgeon should reduce, as much as possible, the time during which the tube is allowed to remain *in situ*.

4. The surgeon must avoid touching, during his examination, the posterior wall of the larynx, as in doing so he produces a violent coughing as well as a sensation of strangulation.

INDICATIONS.

Foreign Bodies: *Case 1*: W. E. T., a boy, 6 years of age, admitted to the University Hospital, May 18, 1908, with the history of having swallowed a nail two weeks previously. This nail on account of persistent cough and rise of temperature, although the child's general condition remained good, was believed to have entered the trachea. The physical examination demonstrated a small,, thin, dyspneic, exceedingly intractable colored child. The temperature, pulse and respirations were 101° F., 140 and 64 respectively. Marked limitation of expansion of the left half of the chest upon respiration, together with dullness on percussion, occasional rales, but practically absent breath-sound and vocal fremitus, especially posteriorly below the spine of the scapula, indicated the existence of stelectasis of the lung, particularly the inferior lobe on that side. Aside from the exaggerated respiratory movement and breath-sounds, the right lung was entirely normal. Cardiac action was rapid and weak.

A skiagraph showed very well the presence of a nail about 2.5 cm. in length, lying obliquely in the direction of the bronchus, head downward, between the fourth and fifth left costal cartilages at their external junctions.

Tracheo-bronchoscopic examination: Under chloroform anestresia, the Jackson tracheo-bronchoscope was readily introduced by direct vision through the larynx into the trachea, employing the separable speculum. The instrument was passed through the bronchial three as far as the bifurcation of the left bronchus, displaying normal mucous membrane throughout. At that point, the superior lobe bronchus appeared entirely normal. The inferior lobe bronchus presented a lumen filled with yellowish-gray pus, pus being evacuated by means of suction pump and cotton carriers. For a distance of about 3 cm. above the surface of the pus the mucous membrane in addition to much congestion, swelling and inflammation displayed a pinkish, brownish, grayish coloration, evidently bordering on degenerative or necrotic processes. A careful search in a beautifully well lighted field failed to reveal the nail, which was supposed to have become imbedded and lost to vision in the markedly swollen mucous membrane. The child was taken home in fairly good health. Two months later had coughing spell and expelled tack.

The particularly noteworthy feature in the report and study of this case, is the beneficial influence which may have been exerted by the removal of the comparatively large quantity of pus from the lung in aborting or preventing further abscess formation.[1]

Treatment and Location of Strictures: 1. Those of the esophagus.[2] 2. Strictures of the trachea and esophagus, malignant, as well as benign. It has been said by one authority that ninety-five per cent of all esophageal strictures can be successfully dilated through the esophagoscope with practically no danger to the patient.

Removal of Benign (Papillomas) and Malignant Tumors: *Case 1*: M. C., aged 22; family history negative; usual diseases of childhood. Personal history: About three years ago noticed commencing huskiness in her voice, gradually increasing. Consulted doctor in Ireland, who advised her to have all the teeth of the upper jaw removed, as he believed this was the cause of her increasing aphonia; this was done. She consulted another Irish physician and he advised and performed a cauterization of the papillominous growth, marks of which can be plainly seen on laryngoscopic examination; no improvement. Upon bronchoscopic examination with Kahler's 11 mm. wide spatula, a small pea-shaped growth was brought into view, occupying middle position of the posterior commissure between the arytenoid cartilages. There was no inflammatory changes of the vocal cords discernable. Epiglottis normal, larynx and trachea normal, and for curiosity's sake we used the round Kahler bronchoscopic tube with extension, which allowed us to inspect the inferior lobe bronchus and the middle lobe bronchus on both the right and left side. These we found to be normal, with exception of slight congestion in the middle lobe bronchus. On her return to the office a month later we re-examined the larynx and trachea. Congestion had disappeared; papillominous growth had slightly increased in size. At this time operation would have been performed but owing to the fact that the young girl was menstruating it was deemed advisable to wait until the period had passed. On December 17 under 20 per cent cocain and adrenalin anesthesia by direct bronchoscopy with 11 mm. spatula, the papillomatous growth was removed with the Cordes curette with very little bleeding, and the stump touched with two applications of alcohol absolute.

NOTE: On December 19, the first visit after operation, patient informs me that she is entirely free from the sensation of smothering and great exertion in phonation, in other words, that while her voice is not by any means clear, it requires less effort upon her part to speak.

(*To be continued*).

THE

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ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

THE APPLIED ANATOMY AND THE INTRA-NASAL SURGERY OF THE ETHMOIDAL LABYRINTH.*

DR. HARRIS PEYTON MOSHER, BOSTON.

During the last year I have passed through a revelation in connection with intra-nasal ethmoidal operating. The surgical application of a well-known relationship of one of the anterior ethmoidal cells caused me to look at the labyrinth in a new light and to completely change my operative technic. The suddenness and sharpness of the new conception were startling. Whether you will find the procedure novel in any way I do not know. Neither do I know whether it has been described in the literature. Some of my associates and friends have been kind enough to say that it was new to them, also some of them have had to a certain extent the same operative awakening which occurred to me. I do not mean to give the impression that I am now suddenly thoroughly happy and altogether efficient when working in the ethmoidal labyrinth. I am not, and never shall be; but I can keep my feet better than ever before, and my operative manipulations have changed from a blind opening of cell after cell into a definite and systematic procedure.

An increase of my knowledge of the relationships of the agger nasi cell, the lowest and the most anterior of the cells grouped about the upper part of the unciform groove, led to my operative awakening. In certain animals a turbinate, the naso-turbinal, runs beneath the nasal bone and above the maxillo or inferior turbinal. Anteriorly it is attached to the inner surface of the ascending process of the superior maxilla. In monkeys and man this turbinate is wanting, but a ridge remains to mark its former attachment. In man, about a third of the distance down the unciform groove and in front of it, over the ridge called the agger nasi, there is very frequently an anterior ethmoidal cell, called from its position the cell of the agger nasi. This cell drains backward into the unciform groove. Not rarely two cells are found at this point. This cell is covered by the anterior attachment of the middle turbinate where this bridges across the upper part of the unciform groove. When this cell is of any size, the mound which it makes on the upper part of the inner surface of the ascending process of the superior maxilla is readily made out in the nose of the living subject. For years this cell has stared me in the face in anatomical preparations. A short time ago it occurred to me to begin the opening of the ethmoidal labyrinth by passing a curette into it. I did so, and found that the head of the curette was at once in a sizable cavity. A probe carried into this entered the frontal sinus with great ease. The same thing happened in other specimens and kept on happening during the next few excited weeks until the procedure had proved successful for catheterizing the frontal sinus in fifty out of fifty-three heads. As the frontal sinus cannot be catherized by the anatomical route in any such proportion of cases, and as the usual operative procedures for catheterizing the sinus are not successful in anything like this percentage, I began to try this manipulation on the living. The results were almost as successful as they were on the dead. It was soon found that the procedure was an easy and sure way of exenterating the anterior ethmoidal cells, and that a slight and natural extension of the manipulation accomplished the same thing in regard to the posterior cells.

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*Read at the annual meeting of the American Laryngological Association, Atlantic City, May, 1912.

The foregoing somewhat long and personal paragraph will serve, with your permission, as an introduction to this paper. The purpose of the article, then, is to review the applied anatomy of the ethmoidal cells, to describe the position and the form of the nasofrontal duct, and then to outline a definite and systematic plan of exenterating the ethmoidal labyrinth by the intra-nasal route. Throughout this article I shall dwell only on the anatomical points which bear upon the purpose of the paper.

The Position of the Ethmoidal Labyrinth: The ethmoidal labyrinth is placed outside of the cribriform plate and rises an eighth of an inch above it. Posteriorly, the labyrinth is in part free in the nasal cavity and in part united to the front face of the sphenoidal sinus. Anteriorly it is bounded by the posterior and inner surface of the ascending process of the superior maxilla and by the posterior surface of the internal angular process of the frontal bone. Its position in relation to the orbit, the antrum, and the nasal cavity is too well known to call for review.

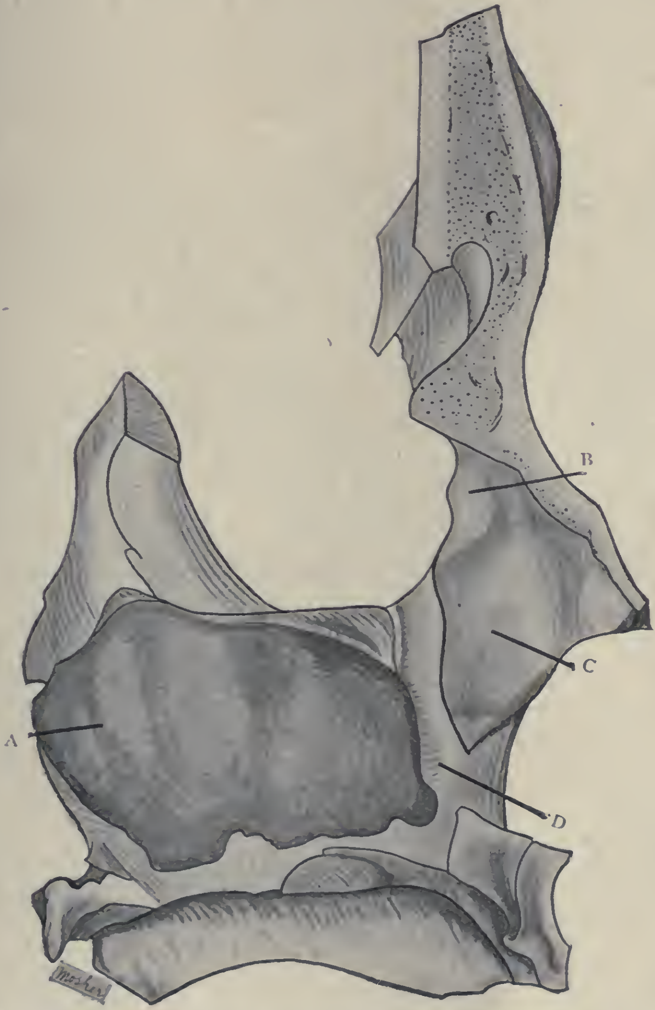


Figure 1. Drawing from a specimen to show the ascending process of the superior maxilla, the agger nasi, and the lacrimal groove.

A. Antrum. B. Agger nasi. C. Ascending process of superior maxilla. D. Lacrimal groove.

The Classification of the Ethmoidal Cells: The ethmoidal cells are divided into two groups by the attachment of the middle turbinate. The cells placed in front of this plane are classed as anterior, and those back of it as posterior cells. (Figure No. 2). The attachment of the middle turbinate begins anteriorly in front of the unciform groove, roughly, about a third of the distance down the groove, and in the region of the ridge of the ascending process of the superior maxilla called the agger nasi. After bridging across the unciform groove the attachment of the middle turbinate slants directly downward, making an angle of forty-five degrees with the front face of the sphenoidal sinus. The upper third of the unciform groove is covered by the anterior part of the middle turbinate. The essential anterior cells are on this level.

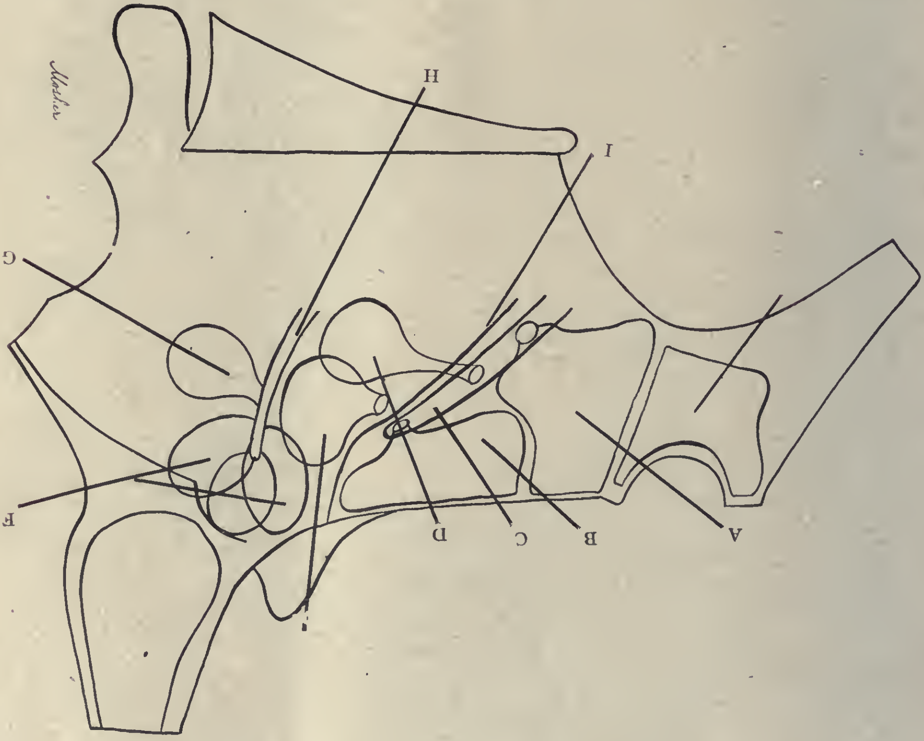


Figure 2. Diagram of the arrangement of the ethmoidal cells.

A. Posterior ethmoidal cell. B. Posterior ethmoidal cell. C. Third meatus. D. Lower cell of ethmoidal bulla. E. Upper cell of ethmoidal bulla. F. Cells at upper part of unciform groove. G. Agger nasi cell. H. Unciform groove. I. Attachment of middle turbinate. J. Sphenoidal sinus.

The Grouping and the Size of the Ethmoidal Cells: Three or four small cells radiate from the upper part of the unciform groove under cover of the middle turbinate. They suggest in their arrangement the tail fins of a lobster. A third of the distance down the unciform groove, in front, and in the region of the agger nasi there is another cell, the agger nasi cell. There may be two cells in this locality. The posterior boundary of the unciform groove is the oblong sausage-like swelling of the ethmoidal bulla. This consists, as a rule, of two cells, an upper and a lower. The first or the upper cell is in close relationship with the cells which crown the unciform groove. This cell opens posteriorly into the groove of the ethmoidal bulla. The lower of the two cells in the bulla in most cases pierces the attachment of the middle turbinate and drains into the middle of the third meatus.

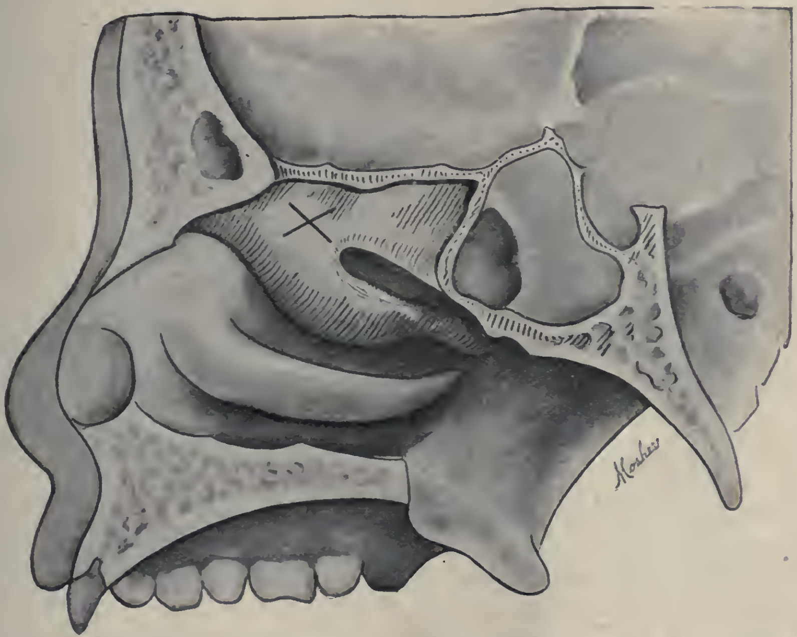


Figure 3. Drawing showing the middle and the superior turbinates. The cross indicates the point at which the curette is carried into the ethmoidal labyrinth. The portion of the middle turbinate below the summit of the third meatus is called in this paper the lower overhang, and the portion above and in front of this point, the upper overhang. The cross is placed on the upper overhang.

The third meatus in one-half of the cases is the highest and therefore the supreme meatus. It has three openings classed as upper, middle and lower. The middle opening, as has just been said, in most cases leads to a cell which makes the inferior part of the ethmoidal bulla. The upper opening leads to a cell which runs outward and expands upon the os planum for its base and then runs upward to the roof of the ethmoidal labyrinth. The inferior opening leads to a cell which, like the upper cell, runs outward to the os planum and there expands and makes its base. (Figures 5, 6 and 7.) Then, like the upper cell, it runs to the roof of the labyrinth and then extends backward to the front wall of the sphenoidal sinus, with the outer part of the anterior wall of which it unites, the outer part of the front face of the sphenoidal sinus and the posterior part of the ethmoidal labyrinth having in this way a common wall.

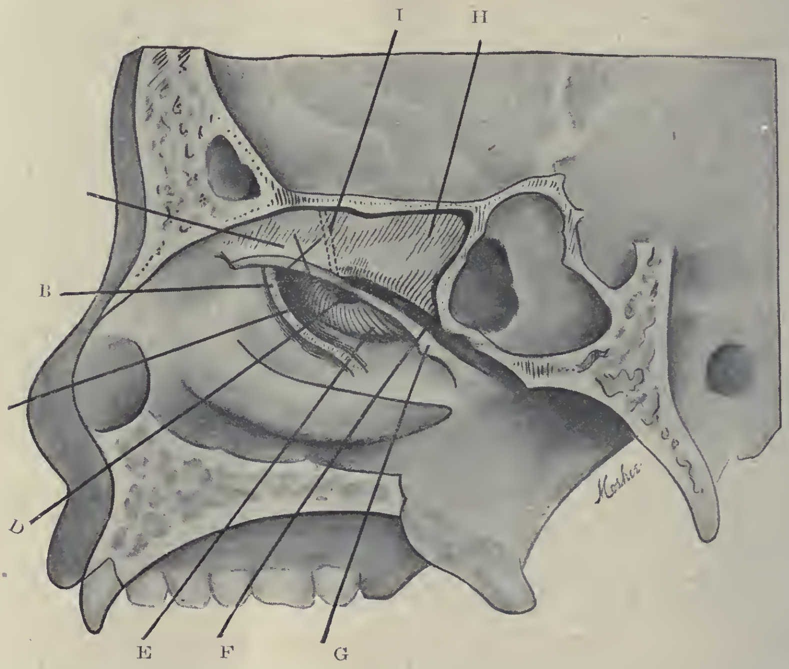


Figure 4. Drawing to show the anatomy of the nose after the middle turbinate has been removed in the usual manner. It is important to notice that the upper anterior part of the middle turbinate is still in place, and that this portion of the turbinate bridges over the upper part of the unciform groove. Removing the middle turbinate in this manner neither completely uncovers the anterior half of the ethmoidal labyrinth, nor opens it. The cross indicates the point at which the curette is carried into the labyrinth.

A. Upper anterior part of middle turbinate. B. Unciform process. C. Unciform groove. D. Groove of ethmoidal bulla. E. Ethmoidal bulla. F. Third meatus. G. Posterior attachment of middle turbinate. H. Superior turbinate. I. Upper part of attachment of middle turbinate.

When a fourth meatus is present there is usually but one cell leading from it. This may monopolize the whole of the common wall with the sphenoidal sinus, or it may take a part and leave the rest for the lower cell of the third meatus. (Figures 8 and 9.) The posterior cell, which is in relationship with the front wall of the sphenoidal sinus, often sends a prolongation backward to the outside of the sinus, and at times this is larger than the sinus itself. There are some seven anterior cells, and they are small; there are three or four posterior cells, and they are much larger, especially the most posterior cell, than the anterior cells. It is not unusual to find one or two large posterior cells making up the whole posterior half of the labyrinth. The anterior and the posterior groups of cells are generally distinct, and the partition between them, the attachment of the middle turbinate, is thin and easily broken. I have met with two instances in the dissecting-room and one instance in the living, a case which I saw with Dr. F. P. Emerson, in which the attachment of the middle turbinate was so strong that no force which one would be justified in using on the living would force a curette through it.

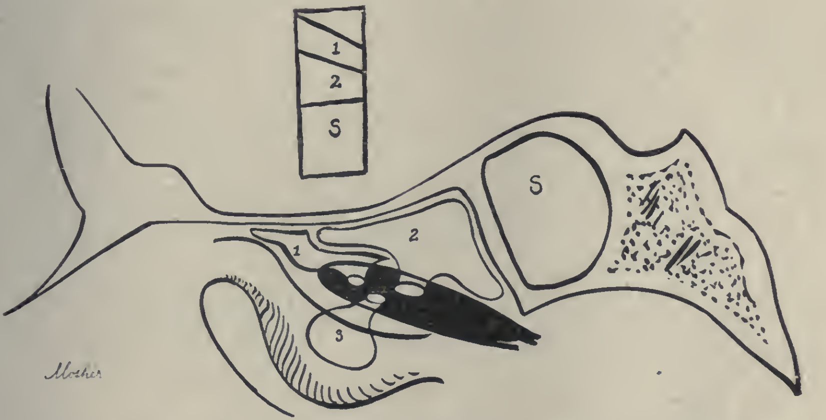


Figure 5. Drawing to show the arrangement of the ethmoidal cells. In this specimen there is no fourth meatus. Cell No. 1 runs outward to the os planum and then upward to the roof of the ethmoidal labyrinth. Cell No. 2 does the same as No. 1, except that posteriorly it is in relation with the outer half of the front face of the sphenoidal sinus. Cell No. 3 pierces the attachment of the middle turbinate and expands in the lower half of the ethmoidal bulla. This happens in 60 per cent of the cases. The arrangement here given is the usual one where there is no fourth meatus. The specimen shows the large size of the most posterior cell, and how little curetting is necessary to convert the posterior cells into a single cavity.

The upper small drawing shows the relationship of cells 1 and 2 to the roof of the ethmoidal labyrinth. The area occupied by the summit of cell No. 2 should be twice as large as given in the drawing.

The most posterior ethmoidal cell is in relation not only with the front wall of the sphenoidal sinus, but with the optic nerve and the large veins from the orbit which empty into the cavernous sinus. For practical purposes this makes it in relation with the cavernous sinus itself.

The Naso-Frontal Duct: The conception which I had of the naso-frontal duct was that it consisted of a tube-like canal a half of an inch long, which left the posterior internal angle of the frontal sinus an eighth to a quarter of an inch from the median septum, and then ran down through the sponge-like anterior ethmoidal cells to the inside of the lacrimal bone, to end in the unciform groove in a quarter of the cases, or in half of the cases to end under cover of the middle turbinate, above and distinct from the unciform groove, the unciform groove in such cases ending in an anterior ethmoidal cell. Thus the canal was surrounded by ethmoidal cells, which separated to make the duct, and as they surrounded it they could, and often did, mound into it and narrow and distort it. (Figure 10.) On examining the form of the duct, I was surprised to find that in very many cases—I cannot give the figures, because as yet my series is not large enough—there is no

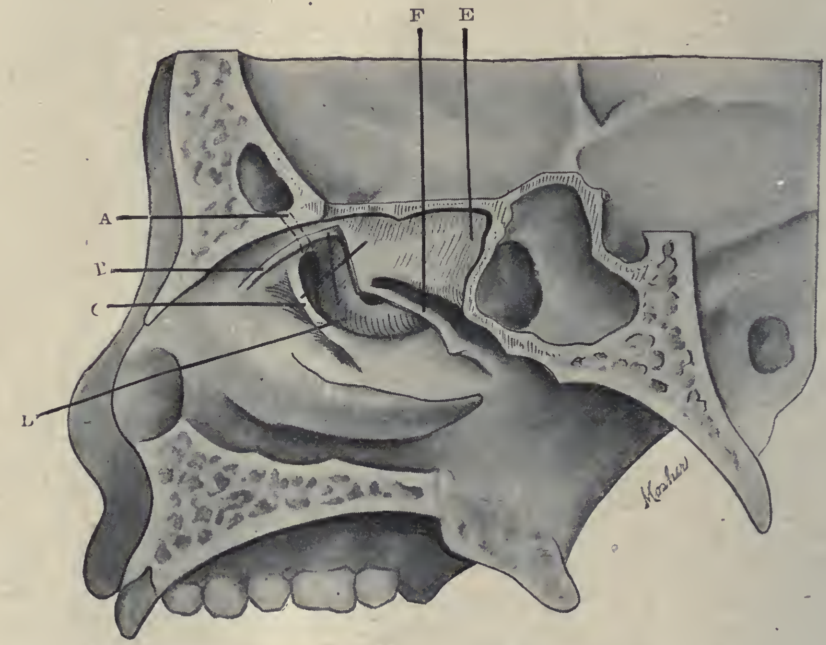


Figure 6. Drawing from a specimen in which the middle turbinate has been completely removed. By the removal of the upper overhang of the middle turbinate the anterior half of the labyrinth has been fully exposed. Compare this figure with the preceding one in which the upper overhang of the middle turbinate is still in place. The usual operative procedure (Figure 4) deals only with the lower overhang of the middle turbinate. The upper overhang (Figure 6) is on a line with the superior turbinate and for practical purposes, continuous with it. In order to enter the ethmoidal labyrinth, and to obliterate the naso-frontal duct the curette must pierce the middle turbinate in the upper overhang and at the level of the superior turbinate.

The cross indicates the place at which the curette is carried into the labyrinth.

A. Naso-frontal duct. B. Attachment of middle turbinate. C. Unciform process. D. Ethmoidal bulla. E. Superior turbinate. F. Attachment of middle turbinate.

tube-like duct. The only place where it has this form is at the beginning, where it is made by the internal angular process of the frontal bone. At this point there is a definite bony ring. This at once, however, gives way to an antro-posterior slit, which is more like an ethmoidal cell or an irregular meatus. Ethmoidal cells often empty into this at its lowest part. There is a tubular duct only in those cases where an ethmoidal cell is placed in front and makes its anterior wall. Such a cell is not uncommon, running up in front of the duct as its anterior wall and mounding forward into the inner side of the upper extremity of the ascending process of the superior maxilla, or extending still further upward into the frontal sinus in front and to the inside of the duct to end beneath the middle partition which divides the two frontal sinuses (Figure 11) causing the posterior inferior portion of the middle

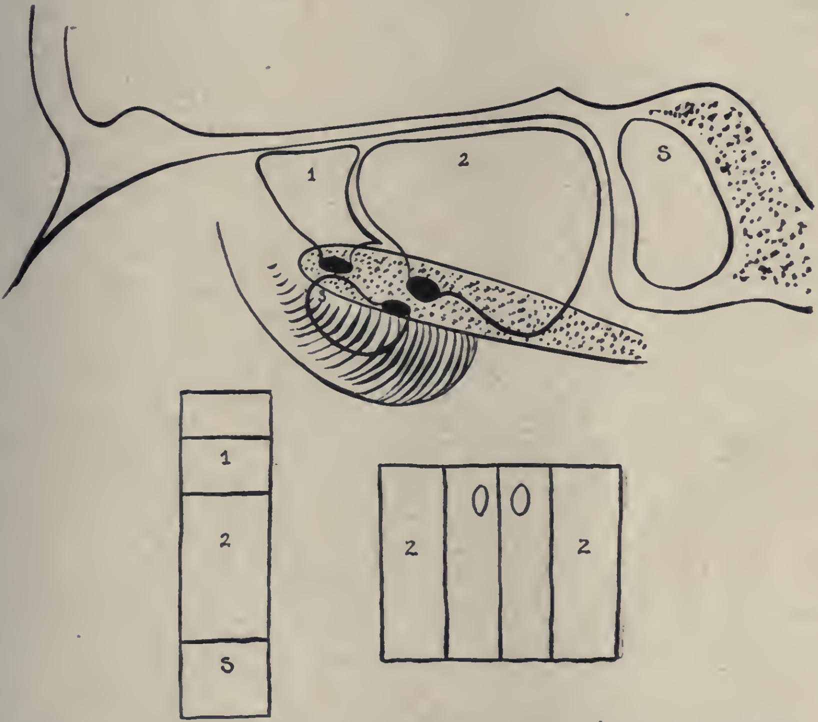


Figure 7. Drawing from a specimen in which two posterior cells make up the major part of the posterior half of the ethmoidal labyrinth. Very little curetting would be necessary to turn the posterior half of the ethmoidal labyrinth a single cavity.

The first small drawing shows the area of the roof of the ethmoidal labyrinth occupied by the summits of cells 1 and 2. The second small drawing shows the area of the front face of the sphenoidal sinus, which has a common wall with the posterior ethmoidal cell. (Figure 2).

partition to balloon outward. Such a formation narrows the duct anatomically, but makes it possible to widen it easily by surgery.

Where an anterior ethmoidal cell does not make the front wall of the duct, the duct, as I said, is slit-like, and more comparable to a cell or a meatus than to a duct. (Figures 12-13.) When this cell-like formation is present its inner wall is made by the anterior end of the extreme upper part of the middle turbinate. As far as my specimens show up to the present time it is commoner to find a cell placed to the outside of the duct than in front of it. (Figure 14.) There may be two cells on the outside of the duct. It is less usual to find a cell on the inside of it. As a rule, the duct is nearer the middle turbinate than the lacrimal bone. However surrounded and related to the cells about it the duct may be, it tends to slant inward and to come into relationship with the inner surface on the anterior end of the middle turbinate. The duct, therefore, is easier to reach from the nose than from the orbit. (Figures 15-17.)

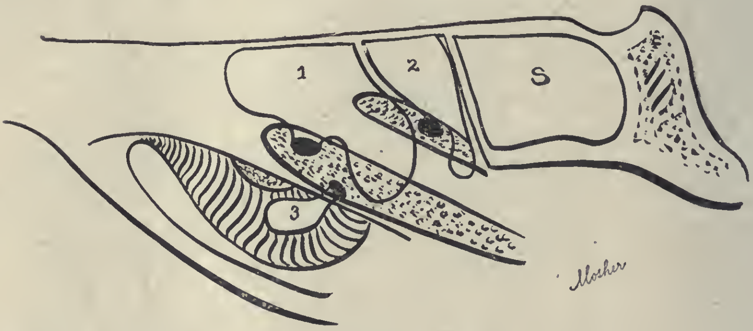


Figure 8. Drawing from a specimen to show the posterior ethmoidal cells In this case two cells lead from the third meatus and one from the fourth. The cell from the fourth meatus has a common wall with the outer half of the front face of the sphenoidal sinus. In a case like this, very little curetting is necessary to turn the posterior half of the ethmoidal labyrinth into a single cavity.

Catheterizing the Frontal Sinus and Exenterating the Anterior Ethmoidal Cells: In order to catheterize the frontal sinus, the chin of the patient should be tipped up forcibly so that the operator can see the extreme portion of the anterior end of the middle turbinate and as much as possible of the superior turbinate. If the septum is deviated and obstructs the view, it can be forced to the middle line with a short Killian speculum. The point of attack is the agger nasi cell, if it is present and its mound can be recognized; if not, the upper part of the anterior end of the middle turbinate. The external guide to this point is the inner canthus of the eye. In the beginning it is useful to lay the curette on the side of the patient's nose and to measure off on it the distance from the inner canthus of the eye to the lower edge of the ala cartilage close to the cheek. A mastoid curette, with a long handle and a bowl about half a centimeter wide, is the most convenient instrument to work with. (Figures 3, 4, 6.) Having located the mound of the agger nasi cell, or if it is not present having brought into view the anterior end of the middle turbinate, the curette is pushed upward into the olfactory cleft with the cutting edge outward and aimed and then pressed toward the lacrimal bone. If the curette is in the right place it easily enters the ethmoidal labyrinth. If it does not, it should be carried higher and a little further backward. The common mistake is not to go high enough and far enough back. The curette has an allowable outward excursion varying with the labyrinth of a half a

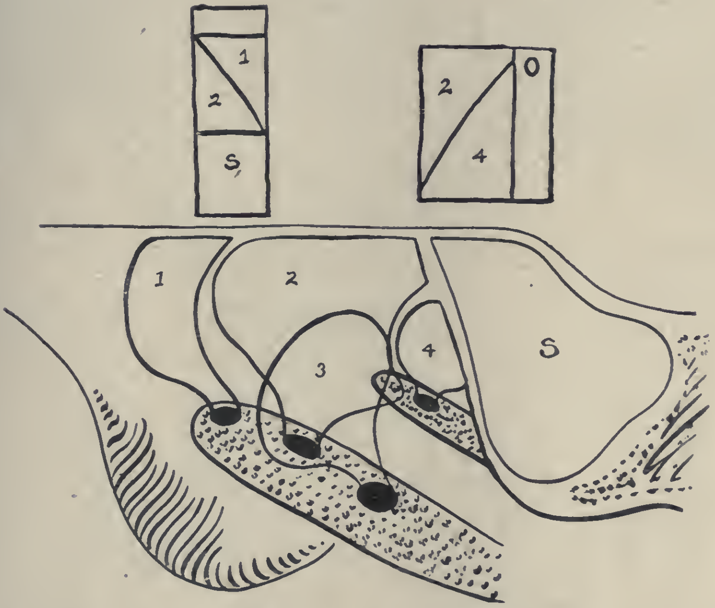


Figure 9. Drawing from a specimen in which both the third and fourth meatus are present. Three ethmoidal cells open into the third meatus, and one into the fourth. The size and the arrangement of the posterior cells is well shown: Cell No. 1 runs outward to the os planum, has its base there and then runs to the roof of the ethmoidal labyrinth. Cell No. 2 is larger, runs outward to the os planum and then upward to the roof of the labyrinth. It also runs backward and has a common wall with the upper outer half of the front face of the sphenoidal sinus. Cell No. 3 runs outward to the os planum, but does not reach the roof of the labyrinth. Cell No. 4 has a common wall posteriorly with the inner lower half of the front face of the sphenoidal sinus.

The small figure on the right shows the relationship of cells 1 and 2 with the roof of the ethmoidal labyrinth. The small figure on the left shows the relationship of cells 2 and 4 with the front face of the sphenoidal sinus.

centimeter to a centimeter and a half. If the curette is carried too far it enters the orbit. No harm results, except a slight black eye which lasts a few days. If the operator puts the tip of his finger over the inner canthus he can readily detect the approach of the curette, and if the manipulation is carried out delicately the resistance of the lacrimal bone can be felt. After the initial outward plunge the handle of the curette is brought into the median line and the head of the curette brought into line with the antro-posterior axis of the labyrinth. With the bowl up and the cutting edge downward, the curette is carried backward and downward until the bulla has been entered and destroyed. (Figures 19-20.) This means a backward excursion of half an inch. These manipulations leave the anterior end of the middle turbinate in shreds and dangling. This loose part is now cut off with a conchotome. The cutting surface of the curette is turned forward and a little outward and brought forward until the flint-like posterior edge of the ascending process of the superior maxilla is encountered. A few strokes of the curette leave this bare. When this has been done

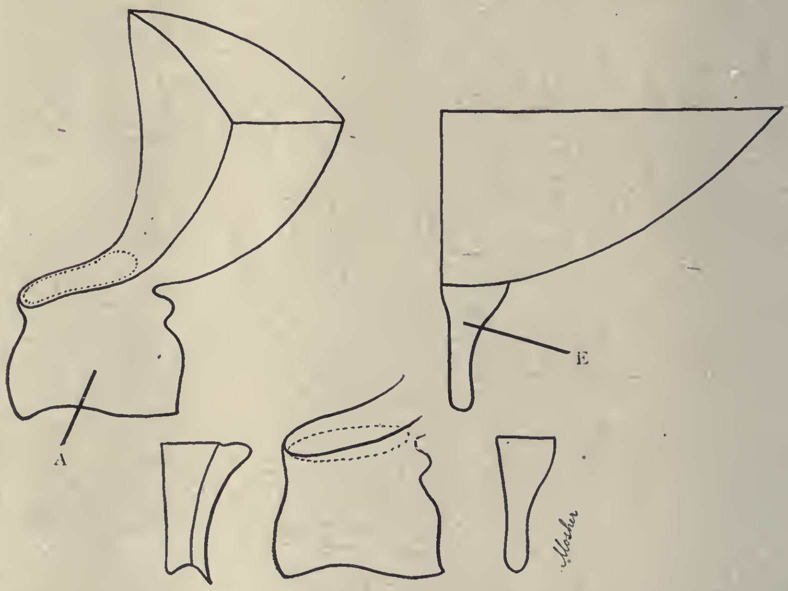


Figure 10. Drawings from casts of the naso-frontal duct. The casts show the duct or a narrow, antro-posterior slit. The naso-frontal duct springs from the floor of the frontal sinus the same as a keel leaves the bottom of a boat. (Large figure on the right).

The three small figures are drawings of the duct detached from the frontal sinus.

A. Side view. B. Rear. C. Side. D. Front. E. View from the front.

the anterior portion of the labyrinth stands open before the operator.

Experiments on the cadaver have shown that these manipulations are easily and quickly executed and that they exenterate the anterior ethmoidal cells and obliterate the naso-frontal duct, except for the bony ring where it leaves the frontal sinus. The operator can be sure that the opening of the naso-frontal duct is in the roof of the operative cavity thus made. Usually it is placed anteriorly and externally, and the best guide to it is the posterior surface of the ascending process of the superior maxilla. If a probe carried upward and outward along the posterior surface of the ascending

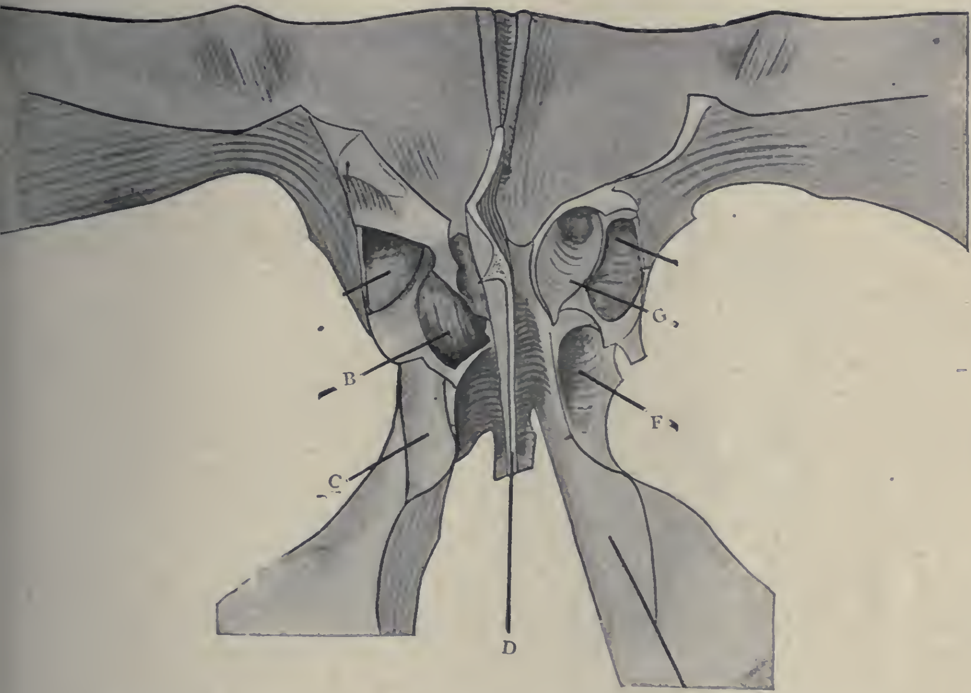


Figure 11. Drawing to show the relationship of the naso-frontal duct to pockets from the frontal sinus and to ethmoidal cells developed in the ascending process of the superior maxilla.

On the left there is a good-sized pocket or prolongation. This springs from the frontal sinus and is below and internal to the duct. There may be a regular cell developed at this place. It is not infrequent to find two such cells. When a prolongation or a cell is present, if the examining probe is carried upward and inward, its point catches in the prolongation. If, however, the point of the probe is directed outwards, the opening of the naso-frontal duct is entered.

On the right the specimen shows two ethmoid cells, the upper one developed in the frontal bone and the lower one in the ascending process of the superior maxilla.

A. Naso-frontal duct. B. Pocket of frontal sinus. C. Lacrimal groove. D. Septum. E. Ascending process of superior maxilla. F. Ethmoidal cell. G. Ethmoidal cell. H. Naso-frontal duct.

process of the superior maxilla does not drop into the frontal sinus, the probe should be carried further backward and then brought forward still pointing outward. This procedure is necessary when an anterior ethmoidal cell makes the front wall of the naso-frontal duct. When present, such a cell is often broken down by the forward curetting. In a few cases it is necessary in order to find the duct to turn the end of the probe inward. If the probe is turned inward at the start there is danger of getting it caught in a cell on the inside of the tip of the ascending process of the superior maxilla, or in a similar cell placed a little higher up and mounding into the posterior part of the median partition of the frontal sinuses. (Figure 11.)

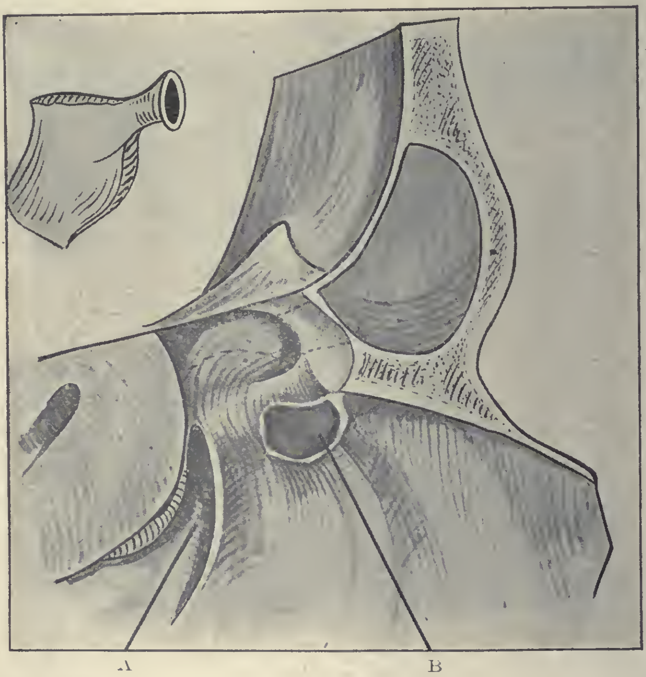


Figure 12. Drawing from a specimen in which the unciform groove ends blindly and where the naso-frontal duct is flask-shaped (small upper figure) and opens above the unciform groove. The inner wall of the duct is made by the extreme upper anterior part of the middle turbinate. This part of the turbinate has been removed—an agger nasi cell lies below the duct and mounds somewhat (dotted line) into it. In this specimen the only real duct is the neck of the flask (parallel dotted lines), the greater part is an antro-posterior slit closed above and behind and widely open below. This formation resembles a rude meatus more than a duct.

A. Unciform groove. B. Agger nasi cell (opened).

In order to enlarge the duct the head of the curette should be carried upward behind the ascending process of the superior maxilla until it brings up against the roof of the ethmoidal labyrinth, or if the duct is wide, against the posterior wall of the frontal sinus, where this slopes downward and backward over the orbit. A small curette will enter the posterior part of the sinus, and to carry it upward until it strikes the sloping roof of the sinus posteriorly produces a most uncanny feeling. A lateral x-ray plate gives the operator confidence in this matter, because from this by measurements he can get an idea of the slope and the height of the posterior wall of the sinus. In order to enlarge the duct, therefore, after the curette has been carried upward until it meets with the resistance of the posterior wall of the sinus, the bowl is turned outward toward the orbit and brought forward and downward until it brings up against the ascending process of the superior maxilla

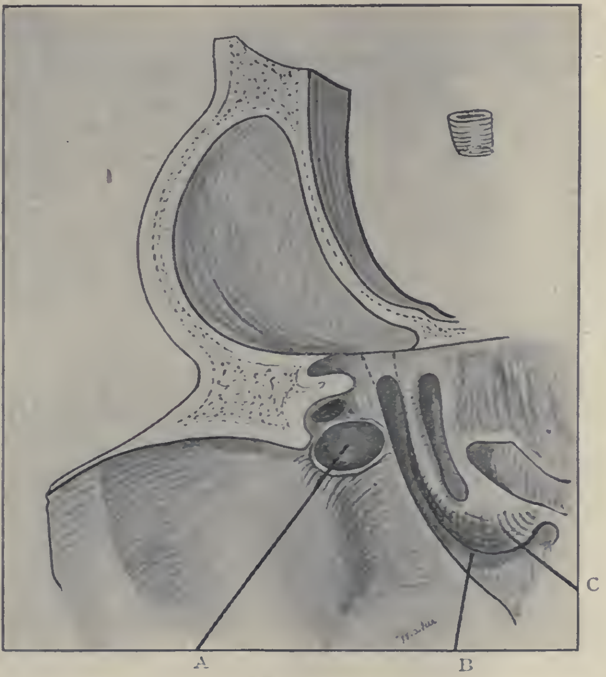


Figure 13. Drawing from a specimen in which the naso-frontal duct is continuous with the unciform groove. The position and size of the duct are indicated by the dotted lines. The small upper figure shows the form of the duct: i. e., the duct is short and tubular. It is but little more than a thickened ring.

A. Agger nasi cell (opened). B. Unciform groove. C. Ethmoidal bulla.

If the purpose of the operator is simply to catheterize the frontal sinus and not to exenterate the anterior cells, the initial puncture is made through the anterior part of the middle turbinate and the curette is brought forward until the posterior surface of the superior process of the superior maxilla is curetted free. Then the catheter is introduced. If the opening of the sinus is not readily found all the anterior cells must be exenterated.

Long before this some of you are wondering about the cribriform plate. The cribriform plate is the roof of the olfactory slit and is to the inside of the middle and superior turbinates. All of the manipulations which have been described so far, and are to be described later, are carried on to the outside of the cribriform plate and inside the ethmoidal labyrinth. The roof of the labyrinth is above and distinct from the cribriform plate.

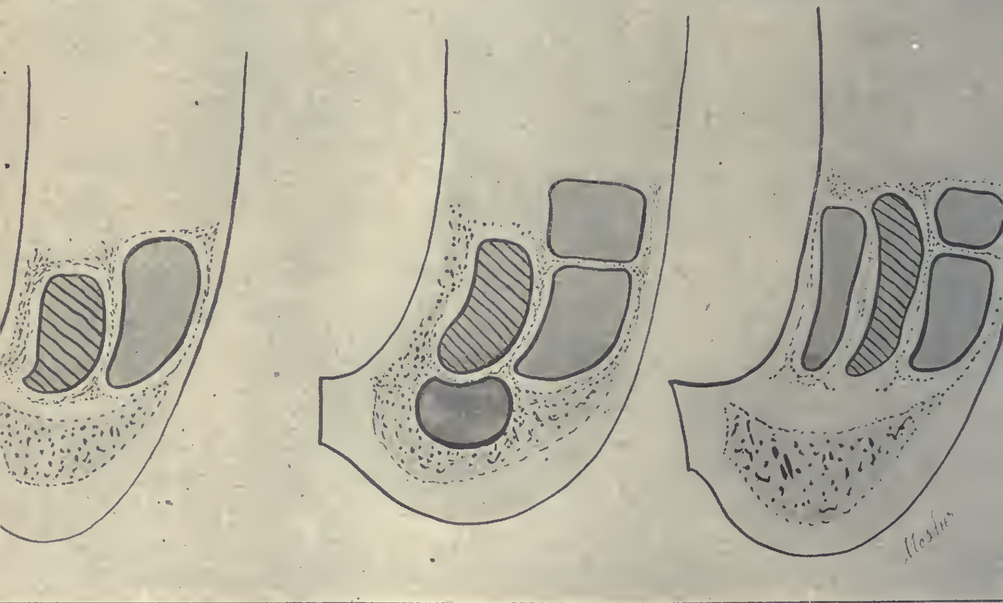


Figure 14. Three drawings to show the relation of the anterior ethmoid cells to the naso-frontal duct (shaded with parallel lines). 1. There is an ethmoid cells to the outside of the duct. 2. There are two ethmoidal cells on the outside of the duct and one in front of it. 3. There are two ethmoidal cells on the outside of the duct and one on the inside. When any of the above formations exist and the cells extend downward into the labyrinth to any extent it is possible to enlarge the duct by turning the duct and the cells into one cavity. It is the aim of the operative manipulations to accomplish this.

In what way does this procedure differ from the customary one employed in catheterizing the frontal sinus? The plan which I have ordinarily followed was to remove the anterior end of the middle turbinate and then to fish upward and outward with a probe for the opening of the sinus. If this did not succeed I took a conchotome and bit away more or less at random the anterior cells which presented, and then tried the probe again. It should be remembered that removing the anterior end of the middle turbinate, as it is usually done, does not open the labyrinth. In order to do this, the extreme upper and anterior part of the middle turbinate must be entered and the curette carried outward and behind the ascending process of the superior maxilla. Not to do this is simply to scratch the inner surface of the labyrinth, not to open it. (See Figure 19.)

The Exenteration of the Posterior Ethmoidal Cells: After the exenteration of the anterior ethmoidal cells it is only necessary to continue the curetting backward through the attachment of the middle turbinate in order to enter the posterior part of the labyrinth. Before the procedure is attempted it is of the greatest importance to bring the head of the patient downward until the roof of the ethmoidal labyrinth is level. During the manipulations upon the anterior cells the head of the patient was tipped strongly upward and backward, and there is a tendency on the part of the operator to leave the head in this position. To do this causes the

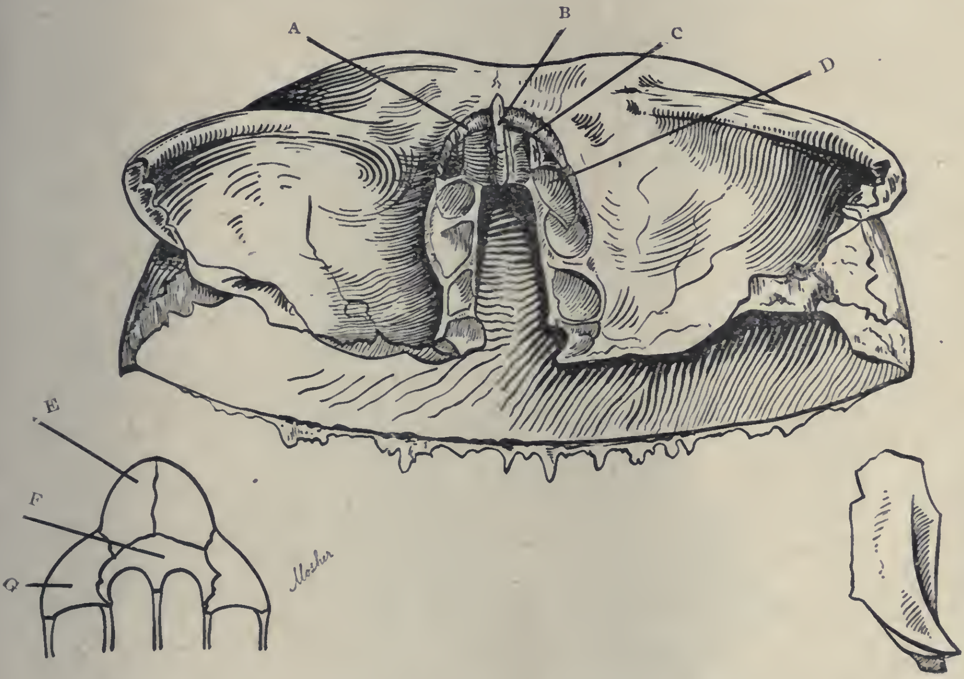


Figure 15. Under-surface of the frontal bone and a cross-section of the nasal bones.

A. Nasal notch. B. Nasal spine. C. Roof of nasal cavity. D. Nasofrontal duct. E. Nasal bone. F. Nasal notch frontal bone. G. Ascending process of superior maxilla.

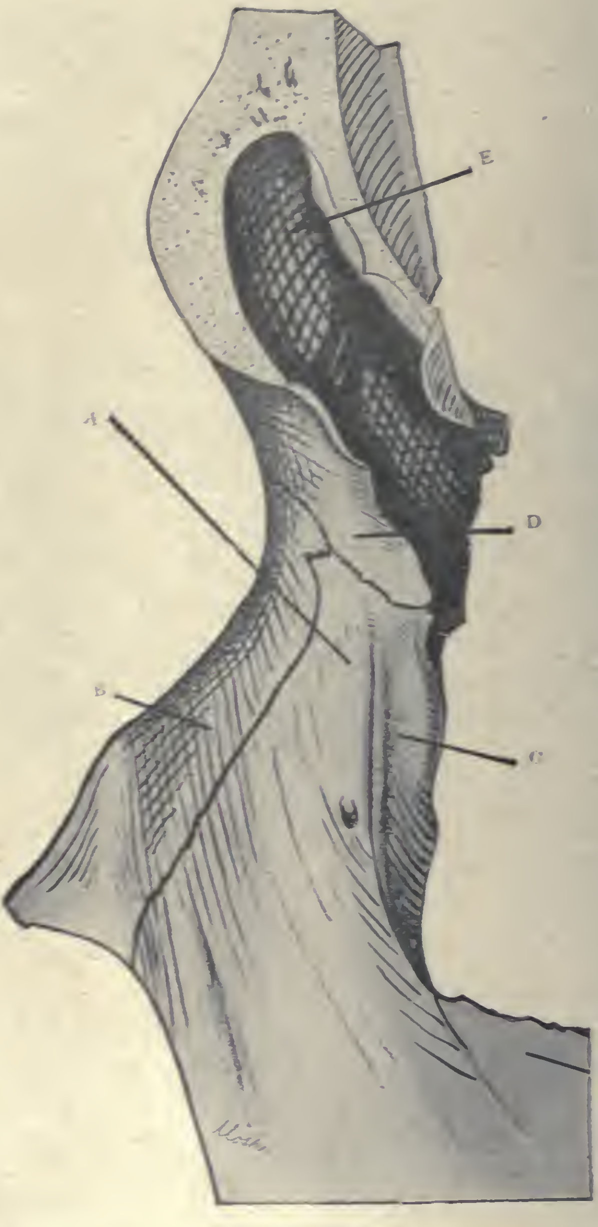


Figure 16. Drawing from a specimen to show the relation of the internal angular process of the frontal bone to the summit of the ascending process of the superior maxilla.

A. Ascending process of superior maxilla. B. Nasal bone. C. Lacrimal groove. D. Internal angular process of frontal bone. E. Frontal sinus.

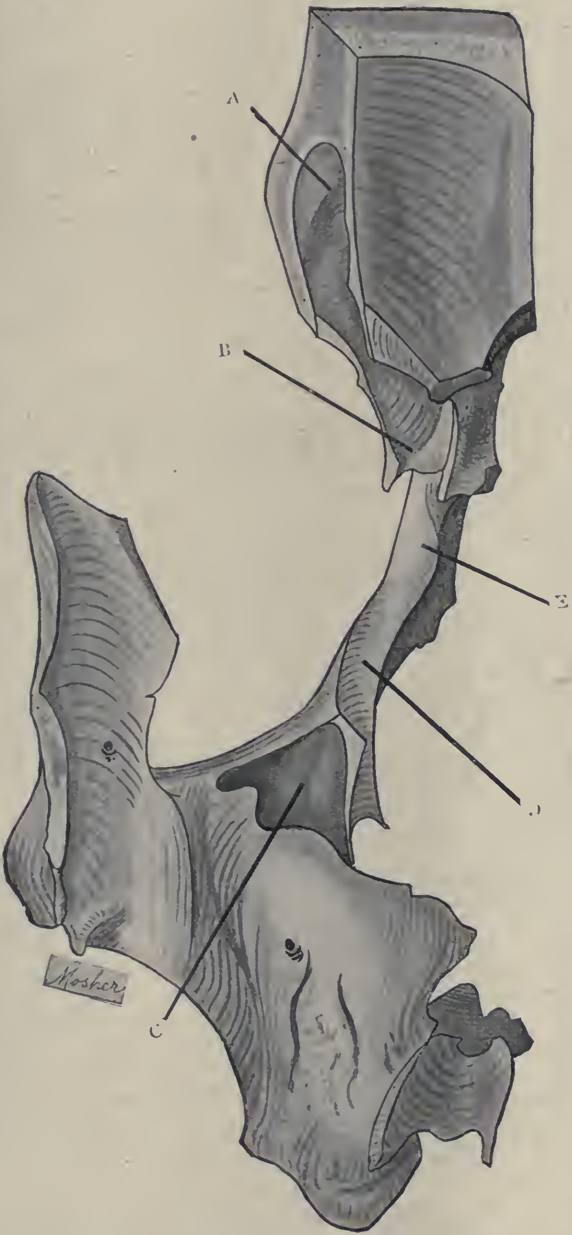


Figure 17. Drawing from a specimen which shows how the internal angular process of the frontal bone makes the anterior half of the opening of the naso-frontal duct and overlaps like a shingle the posterior surface of the ascending process of the superior maxilla. A probe, carried upward along the posterior surface of the ascending process of the superior maxilla is guided by it into the frontal sinus. If the frontal sinus is approached from the orbit the surest way to find the sinus is to remove the lacrimal bone and then to carry a probe upward along the posterior surface of the ascending process of the superior maxilla. In like manner when the frontal sinus is approached from the nose, the operator first turns the anterior cells into one cavity and then in the anterior part of this locates the posterior surface of the ascending process of the superior maxilla and passes a suitably bent probe upward on this as a guide.

A. Frontal sinus. B. Internal angular process of frontal. C. Antrum. D. Lacrimal groove. E. Posterior surface of ascending process of superior maxilla.

operator to lose his orientation, and may, as has happened once, lead to disaster. Therefore, the moment the operator starts to enter the posterior part of the labyrinth, the head of the patient is brought level, and care is taken to keep it in this position for the rest of the operation.

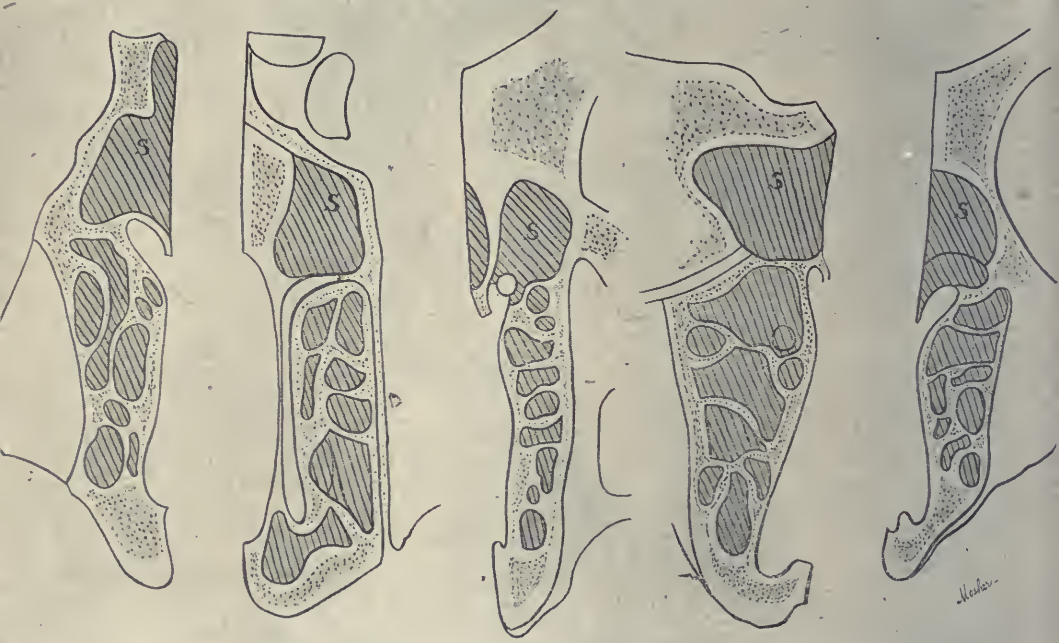


Figure 18. Specimens of the ethmoidal labyrinth cut horizontally. The specimens show the variations in the form of the labyrinth. Each labyrinth tends to bulge toward the septum about three-fourths of the distance back. This inward bulging makes it difficult to see the inner or nasal face of the sphenoidal sinus. In order to do away with this bulging portion of the labyrinth the superior turbinate must be removed flush with the anterior face of the sphenoidal sinus. The third specimen is a narrow labyrinth and the fourth a very wide one.

Having, then, the head of the patient level, the operator plunges the curette through the attachment of the middle turbinate and works slowly backward and downward. In a majority of cases the moment the attachment of the middle turbinate is pierced the head of the curette enters a sizable cavity. This is due to the fact that the posterior cells are much larger than the anterior cells, and that one or two cells not infrequently comprise the whole posterior portion of the labyrinth. (Figure 6-9.) By this formation Nature has left but little for the curette to do. So roomy is the cavity into which the curette enters that the operator, feeling no bottom ahead fears to carry the instrument onward. After the first case or two, when he has come to realize the large size of the posterior cells, the operator loses his natural timidity and quickly carries the curette to the posterior wall of the labyrinth. The feeling of relief that one experiences when the curette brings up against the posterior wall is much like that which comes to the tired and frightened swimmer when he reaches near enough to the shore for his feet to strike bottom.

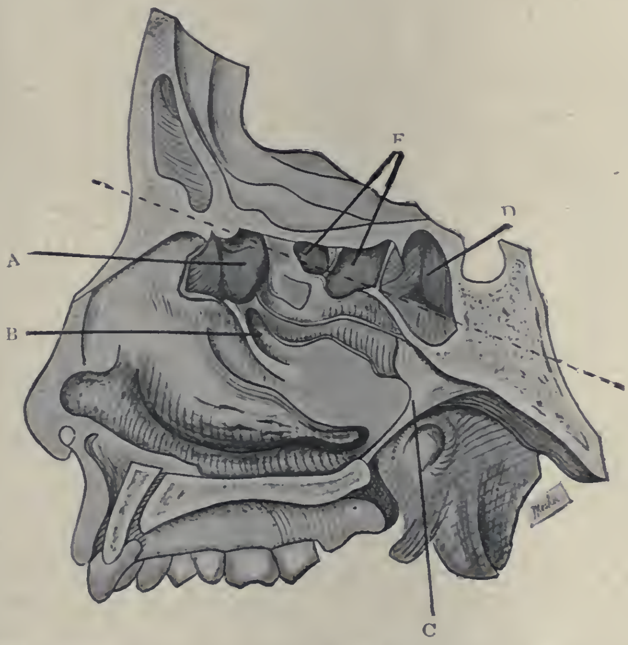


Figure 19. Antro-posterior section through the ethmoidal labyrinth. The middle turbinate has been removed. The anterior cells were destroyed by curetting and a single cavity left. The naso-frontal duct leads from the anterior outer angle of the roof of this cavity. The unciform groove ends blindly below it. There are three posterior cells—two have been opened. The dotted line is the line of a horizontal section which was made through the labyrinth when the dissection had reached the stage shown in the figure.

A. Anterior cells removed. B. Unciform groove. C. Posterior edge of septum. D. Sphenoidal sinus. E. Posterior ethmoidal cells.

The next step in the operation is the removal of the middle turbinate—that is, what is left of it, and the removal as well of the lower half of the superior turbinate. This is accomplished most easily by cutting straight backward as high above the middle turbinate as the scissor-punch can be made to engage. One blade is

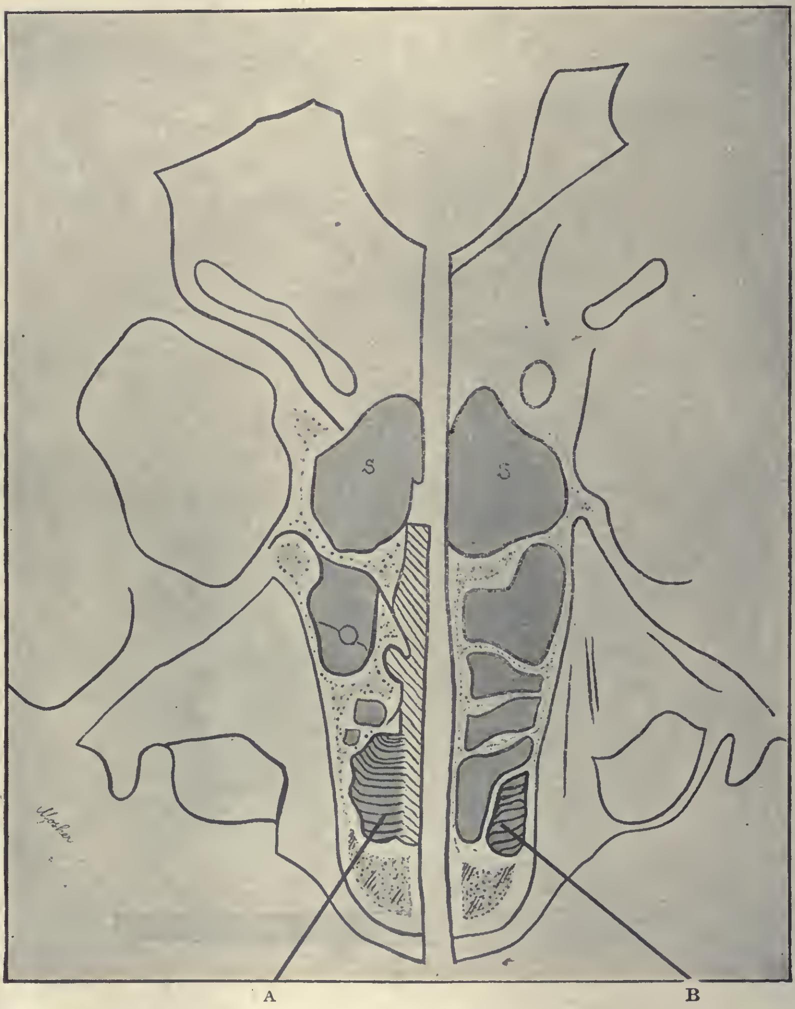


Figure 20. Horizontal section of the ethmoidal labyrinth after exenteration of the anterior cells. (See Figure No. 19).

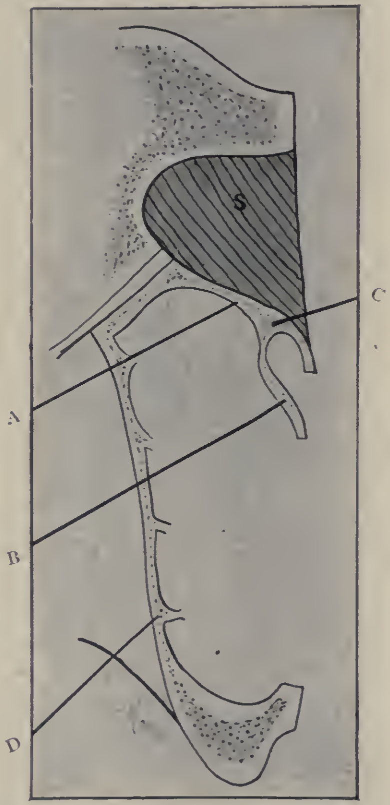
The half of the figure on the reader's left is the lower half of the ethmoidal labyrinth, and the one on the right is the upper half turned over like the lid of a box.

In the first half, the cavity is shown where the anterior cells have been curetted. This in continuous with the naso-frontal duct which is shown in the second half of the drawing. On the inside of the naso-frontal duct an unopened anterior cell (frontal bulla) runs to the inside of the naso-frontal duct and mounds into the floor of the frontal sinus.

A. Cavity left after removing anterior cells. B. Naso-frontal duct.

placed in the exenterated labyrinth and the other follows backward in the olfactory slit. When the scissor-punch has cut its way to the front wall of the sphenoidal sinus, the middle turbinate and the lower part of the superior turbinate are removed with a snare, or are twisted out with a small pair of Luc forceps. If the operator prefers, the remaining portion of the middle turbinate and the required amount of the superior turbinate can be removed with a conchotome.

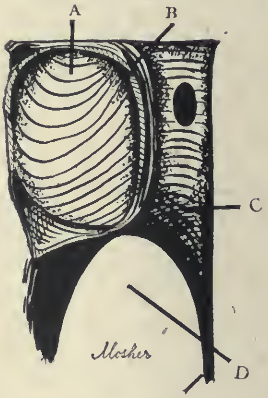
The final step in the operation is the complete uncovering of the front wall of the sphenoidal sinus and the recognition of the posterior ethmoidal cell. The hardest part of the operation is to recognize the limits of this cell. It is in this cell that he can get into the most trouble. Working in this cell, especially in its upper outer posterior angle, is the most dangerous part of the whole procedure. Experience has proved that it can be easily fatal to the patient if the operator loses his bearings in this locality. By carrying the curette backward to the outside of the middle turbinate it must of necessity bring up in this posterior cell. Trouble comes when the head of



A. Outer or ethmoidal face of sphenoid. B. Attachment of superior turbinate. C. Inner or nasal surface of face of sphenoid. D. Os planum.

Figure 21. Drawing from a specimen in which the whole ethmoidal labyrinth has been exenterated. The posterior third of the superior turbinate has not been removed. This bulges inward and obscures the inner or intranasal part of the front face of the sphenoidal sinus. It is necessary for correct orientation in operating to remove the superior turbinate flush with the front face of the sinus. (See Figure No. 6).

the patient is not held level so that the curette strikes the posterior wall at its extreme upper part. If it strikes not only the upper part of this cell, but strikes it at the outer superior angle, it is easy to enter the cranial cavity, especially if the cell wall has been softened by polypi or pus. When, however, the head of the patient has been kept in the proper position, that is, level, the curette meets first the lower part of the posterior wall of this posterior cell. Owing to the bulging inward of the posterior part of the inner wall of the labyrinth, (Figure 21) the front face of the sphenoidal sinus, where it is free in the upper and posterior part of the nasal cavity, is obscured until the posterior part of the superior turbinate has been removed flush with the face of the sinus. (Figure 18.) As soon as this important manipulation has been executed, a very definite and characteristic picture is obtained. To the inside is the septum. (See Figure 22.) Just outside of this comes the free or nasal face of the sphenoidal sinus. This is recognized by the presence of the ostium. Further out and limiting the front face of the sinus is the ridge which represents the attachment of the superior turbinate. Lastly, to the outside of this there is a depression made by the remaining portion of the posterior ethmoidal cell (Figure 22). Once this picture is obtained, however, it is necessary to follow up the removal of the superior turbinate absolutely to the front wall of the sinus. If the operator loses his orientation he can regain it, and he should regain it or abandon the operation, by finding the superior rim of the choana and then advancing upward with a probe close to the septum.



A. Outer or ethmoidal half of front face of sphenoid. B. Attachment of superior turbinate. C. Inner or nasal surface of face of sphenoid. D. Right choana.

Figure 22. Diagrammatic drawing of the front face of the sphenoidal sinus. When the exenteration of the ethmoidal labyrinth has been completed and before the sphenoidal sinus is entered the operative field should present the picture given above. The upper outer posterior angle of the ethmoidal face is the most dangerous area in the operation, i. e., the region of the upper left-hand marker A.

No matter how narrow the inner or nasal part of the front wall of the sphenoidal sinus may be, this procedure will locate it. The wider the posterior cell the narrower is the free part of the front wall of the sinus. The inclination of the operator is to work too high and too far outward, and so to mistake the posterior wall of the posterior ethmoidal cell for the free or nasal wall of the sinus. Having made out the extent of the free wall of the sinus and likewise the extent of the posterior wall of the posterior ethmoidal cell, which is a wall common to the posterior cell and the outer half of the front face of the sinus, the operator selects the inner half of the front face and forces the curette through the ostium of the sinus into the cavity of the sphenoid. If the location of the ostium is not clear, the operator finds the upper rim of the choana and proceeds with his curette up the front wall of the sphenoid close to the septum. Presently the curette finds a thin place and enters the sinus. It seems to me dangerous to enter the sinus through the posterior wall of the posterior ethmoidal cell. When the ostium has been found and the cavity of the sinus entered, a probe bent at a right angle is introduced into the sinus and turned outward and brought forward against the external part of the front face of the sinus and its width ascertained. This will show much of the anterior wall can be removed. With this information in mind the operator introduces into the sinus a small, right angular punch and bites outward, and downward, and inward, until all the thin bone of the front face of the sphenoidal sinus has been removed. The steps of the operation have now been completed. All that remains is to remove tags wherever they are found. It is not well to curette the superior outer angle of the posterior cell. The probe is even more dangerous in this region than the curette, because at this point the wall of the cell is thin. There has been one fatality from a probe entering the cranial cavity at this place. Not only can the probe enter the anterior fossa if used at this point, but it may encounter the ophthalmic veins as they merge with the cavernous sinus. Hitting these veins is practically the same thing as puncturing the sinus itself. As a finishing touch the curette is carried outward to the os planus posteriorly and brought forward along its inner surfaces. In my experience, the os planun is fairly resistant. Where there has been much suppuration there may be dehiscences.

Summary: The anterior boundary of the ethmoidal labyrinth is made by the internal angular process of the frontal bone and the posterior surface of the ascending process of the superior maxilla. The labyrinth cannot be entered effectively unless the curette is carried outward behind the ascending process of the superior maxilla toward the lacrimal bone. Removing the anterior end of the middle turbinate and curetting upward, and not outward, does not open the labyrinth to any extent. The internal angular process of the frontal bone makes two-third, or the whole, of the bony ring, which is the first part of the naso-frontal duct. (See Figures 16, 17). The best guide to the duct is the posterior surface of the ascending process of the superior maxilla. In a large number of cases the naso-frontal duct is not a tubular canal, but consists first of a bony ring and then becomes a triangular antro-posterior slit. This is more like an ethmoidal cell, or an irregular meatus, than a duct. The naso-frontal duct tends to run from without inward and to come into relationship with the upper part of the anterior end of the middle turbinate. When the naso-frontal duct has the cellform the anterior end of the middle turbinate makes its inner boundary. The duct, therefore, is reached most easily through the nose, and through the anterior end of the middle turbinate. A curette introduced at this point and carried ouward toward the lacrimal bone and then withdrawn a little and carried straight backward and downward, enters the anterior part of the labyrinth behind the ascending process of the superior maxilla and breaks down the cells through which the naso-frontal duct runs, destroying both the cells and the duct. Very little curetting is required to convert the anterior part of the labyrinth into a single cavity. In the roof of this chamber, usually in the anterior outer angle, the opening of the naso-frontal duct is placed.

If it is the wish of the operator to clean out all the ethmoidal cells, the posterior half of the labyrinth is entered by piercing the attachment of the middle turbinate and by curetting still further backward, using all the while the outer side of the middle turbinate as a guide. If the head of the patient is held level, the middle turbinate guides the curette backward into the posterior ethmoidal cell. Often the posterior half of the labyrinth is a large cavity, made up of only one or two cells. This portion of the labyrinth has been, as it were, exenterated by nature. When the curette brings up against the back wall of the labyrinth the remaining part of the middle turbinate and the lower half of the superior turbinate are removed. Then the posterior part of the superior turbinate is taken away, flush with the front face of the sphenoidal sinus. The operator now recognizes the inner part of the front face of the sphenoidal sinus, which is free in the nasal cavity, and the outer part which has a common wall with the posterior ethmoidal cell. The posterior outer upper angle of the posterior ethmoidal cells is dangerous to curette or to probe. It is of the utmost importance that the operator should be sure of his landmarks in this locality. He orientates himself by finding the upper rim of the choana and then differentiating the free face of the sphenoidal sinus by proceeding upward from the rim of the choana close to the septum. Having made out the extent of the free face of the sinus, the width of the common wall between the sphenoidal sinus and the posterior ethmoidal cell is determined. The dividing line between the two parts of the anterior face of the sphenoidal sinus is made by the obliquely vertical line, which is the attachment of the superior turbinate.

The usual mistake made by the operator is to get lost in the posterior ethmoidal cell—that is, he goes too high and too far outward, and considers the posterior wall of the posterior ethmoidal cell as the whole of the front face of the sphenoidal sinus. This mistake, if persisted in, will carry him into the brain. Insufficient removal of the posterior part of the superior turbinate and allowing the head to become tipped upward, are the chief causes of this confusion. After the landmarks of the front face of the sphenoidal sinus have been cleared and recognized, the sinus is entered near the septum—if possible, through the ostium—and the whole of the anterior wall removed.

The mishaps of the operation are entering the orbit through the lacrimal bone and entering the posterior part of the anterior fossa of the cranial cavity at the apex of the orbit. The first accident is trivial; the second, fatal.

Puncture of the anterior end of the superior turbinate for catheterizing the frontal sinus or exenteration of the anterior ethmoidal cells is readily accomplished under cocain anesthesia. For the complete removal of the anterior and posterior cells, especially if this is to be accomplished at one sitting, it is more satisfactory to use a general anesthetic.

In beginning this paper I used the word "revelation" in regard to my recent increase of knowledge of the ethmoidal labyrinth. I do not expect that the manipulations here described will have any such effect upon you. Many of the points are already known, and many of the manipulations have been—in part, at least—practiced by you. This is a report of individual, though perhaps belated, progress. My ethmoidal operating has lacked definite plan. I easily became confused as to where I was, and was always in doubt how much had been accomplished at any given moment. The anatomy of the naso-frontal duct was especially hazy.

The operative procedure which has just been described has been tried on the living some ten times. The results have been better than any I have secured before.

828 Beacon Street.

PARAFFIN NASAL BRIDGE BUILDING—TECHNIC AND REPORT OF CASES.*

DR. EUGENE VANSANT, PHILADELPHIA.

Paraffin prothesis for the relief of depression of the nasal bridge is generally credited to Gersuny of Vienna, who first employed it in 1900. Since its introduction reports of occasional unfavorable results have been made, such as, deformity resulting from hyper-injection or from the paraffin spreading to a wrong locality; sloughing or abscess resulting from infection; necrosis of the tissue caused by injecting too much paraffin and amaurosis from thrombosis of one of the ophthalmic vessels. The possibility of such accidents may have prevented some surgeons from undertaking the procedure. However, the technic is now so greatly improved that the probability of any such unfavorable results may be said to be very slight. The most important thing in the new technic is the preparation of the paraffin. This is now melted and mixed with white petrolatum so as to bring the melting point to, or slightly above 110° F. Personally, I use a mixture of 116° F. melting point. It is well to have the paraffin prepared fresh for each operation, as the prepared tubes sold in the shops are not always satisfactory.

The following is a brief explanation of the method pursued, as furnished by my chemist: "We use clean, white paraffin—melting point about 135° F.—and a white petrolatum—melting point about 105° F.—and after the proportions used are approximately 437 to 480 parts by weight. After the bases are melted and mixed they are allowed to cool and solidify—and then carefully melted on a water bath to observe temperature of liquifying point. If too high, a proportionate amount of white petrolatum is added to reduce it—and vice versa if too low."

Paraffin prepared by this method can be used cold and injected with great accuracy. Paraffin mixtures of less than 110° F. melting point seem to be more productive of accidents than those of a higher melting point. The screw-syringe devised by Dr. Harmon Smith is perhaps the best instrument for making the injection. As the screw for making the injection is turned the paraffin is ejected from the end of the needle in a worm-like thread. As a general thing a straight needle can be used, but at times a curved needle is preferable.

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*Read before the Section of Otology and Laryngology of the College of Physicians of Philadelphia, February 19, 1913.

Before the operation, the nose and face of the patient should be scrubbed with green soap, the area to be operated upon further scrubbed with alcohol and covered with a gauze dampened with a 1-1000 solution of bichlorid of mercury or painted with tincture of iodin. The head should be covered with a towel, dampened with the bichlorid of mercury solution and the upper portion of the body covered with a sterilized gown.

The operator and assistant should prepare themselves as for any minor surgical operation. The paraffin syringe and needle should be sterilized. The paraffin is melted in a cup over a spirit lamp and the melted paraffin drawn into the syringe. The filled syringe is then placed in sterile cold water until the paraffin solidifies. Before using, the screw of the syringe should be turned until the paraffin comes out of the needle in a solid thread free from oil and water.

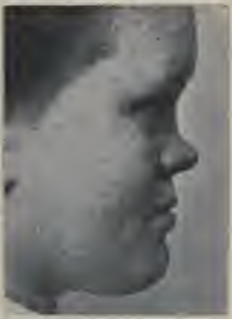

Figure 1.

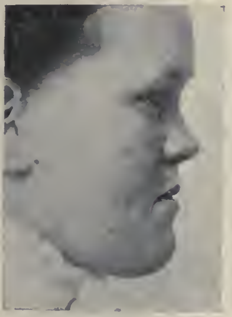

Figure 2.

As a general thing, I prefer not to use a local or general anesthetic.

The operator stands behind the patient, who is seated upon a chair. The assistant stands in front of the patient with his thumbs pressing firmly against the nasal bones, with the tips touching the root of the nose. The injection is made preferably from above downward. At the point of injection, the skin is firmly seized and lifted as high as possible. The needle is inserted above the line of depression and carried down through the areolar tissue to a point just beyond the depression. Before commencing the injection, care should be taken to see that the point of the needle is disengaged and that there is no undue bleeding from the point of entrance.

The paraffin is then slowly deposited, the needle being gradually withdrawn, the operator meanwhile molding the paraffin to the desired shape. Marked anemia of the skin over the injected part is a signal of danger and should cause the operator to desist, or at least to proceed cautiously.

Before withdrawing the needle entirely the point of the needle should be grasped through the skin and a slight rotary motion made with the syringe in order to break the thread of paraffin and not to draw it into the skin. Any hemorrhage from the point of entrance should now be stopped and the puncture covered with a little sterilized cotton soaked with collodium. The patient should preferably remain in bed until the next day, with ice cloths to the surface of the nose. He should be instructed not to touch the parts for some days. Usually the deformity can be corrected with one injection but if for any reason it is thought wise not to continue the injection until the entire deformity is relieved, a second injection can be made a month or two later.

The operator should endeavor to conform the shape and size of the rebuilt bridge to the general character of the patient's features. Certainly a Roman nose on Hibernian features would be undesirable.

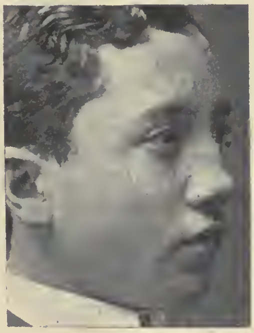

Figure 3.

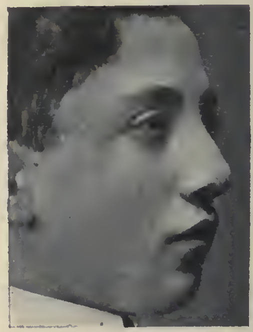

Figure 4.

If the patient is suffering from nasal discharge or ulcerations, preliminary treatment should be given to relieve the condition causing these. A nasal bridge thus restored by paraffin injection seems to be permanent.

The paraffin at the time of the injection is forced into the interstices of the connective tissue; later the enclosing connective tissue-fibers gradually thicken and the restored part has a soft fibrous feeling. The following three cases have been chosen as representing different types of deformity:

Case 1: A young lady, aged about 20 years, gave a history of a blow upon the nose from a fall in childhood, which depressed the bridge of the nose. The deformity had persisted and with the growth of the face had become more marked. The nasal breathing was good. Her general health was excellent. The patient, however, continually worried about her nasal deformity. Examination showed a depressed nasal bridge, having a deep inward curve, the nose was considerably widened. At the point of depression the cartilaginous septum was wanting. The lower part of the septum was thickened, there was no marked obstruction of either nostril.

Operation. March, 1910. After the proper preliminary treatment before mentioned, about 25 mimims of the paraffin mixture was inserted. This overcame the deformity sufficiently to produce a nasal bridge, the lines of which conformed to the other features of the patient's face. No anesthetic was used, the patient suffered but little pain. There was no inflammation following, the only after-effects being a slight swelling, this passed away in about 48 hours. The patient was photographed before and after the operation. The later photograph was taken about a month after the operation. She was seen at intervals, for months, and the improved nasal appearance remained the same. There was marked improvement in her spirits, and she became much more cheerful and bright.

Case 2: A young man, aged 15, gave a history of a blow on the bridge of the nose from a fall against the edge of a stone step, while quite a young child. The bridge of the nose had remained depressed with a swelling toward the left side. The patient's breathing was greatly obstructed, particularly in the left nostril. Examination showed a marked depression of the nasal bridge, with a hard swelling over the left nostril. This was due to the fact that the nasal cartilage at the time of the accident had not only been depressed but had been also dislocated toward the left. The left nostril was almost completely obstructed by the displaced and deflected septum. The right nostril was partially obstructed by the protruding lower border of the triangular cartilage which was separated from the columnar cartilage.

In January, 1911, the nasal obstruction was removed by means of a submucous operation of the nasal septum with the result of restoring good nasal breathing, and about two months later the depressed bridge was filled in with paraffin mixture, with the result of removing the nasal deformity. The paraffin operation was done without an anesthetic, there was little pain or reaction. The patient's improved appearance and breathing were very satisfactory; he was kept under observation for a number of months and the same excellent condition continued. Photographs taken before and after the operation show the improvement.

Case 3: A lady, aged 40, had depression of the bridge of her nose from necrosis of the nasal septum due to syphilis. There was also a scar on the left side of the bridge of the nose, just below the free border of the left nasal bone, due to former syphilitic ulceration. The deformity was marked, producing the typical saddle-back shape. The patient was greatly distressed about her appearance and was very desirous to have an improvement if possible.

We felt considerable trepidation in undertaking the operation, and only consented to do it after prolonged consultation with her family physician. Assurance, however, of former excellent systemic treatment, freedom of the patient for the past four or five years of any syphilitic manifestation and apparent freedom, as shown by examination, of present active syphilis, finally persuaded us to proceed.

Examination showed the cartilaginous septum to be almost entirely absent. From the nasal bone down to the lateral cartilages there was no support whatever to the bridge of the nose. The operation was performed in June of this year, with the greatest care, about 28 minims of the paraffin mixture was injected, and the appearance of the nose greatly improved. No anesthetic was used, and the patient suffered but little pain at the time of the operation. There was considerable post-operative reaction, and the patient was kept in bed for three days, with cold applications locally and mixed treatment internally. She was then allowed to return to her home, greatly pleased with her improved appearance, saying that her nose now "looked like it used to look." Her family physician in a recent letter assured me of her continued improvement to date.

1929 Chestnut Street.

Case cf Total Deafness Following Dose of Quinin. M. J. BALLIN. *N. Y. Med. Jour.*, May 24, 1913.

Girl of 16 took thirty grains of quinin within fifteen minutes. Two hours later severe headache and bilateral tinnitus. No disturbance in co-ordination but steadily progressive deafness, which could not be cured. The case was reported to the author by Prof. Politzer.

ED.

TECHNIC AND AFTER-TREATMENT OF SUBMUCOUS RESECTION WITHOUT PACKING.

DR. L. OSTROM, ROCK ISLAND, ILL.

As early as 1904, while in charge of the nose and throat clinic at St. Mark's Hospital, New York, I noticed that patients who had had submucous septum operations performed and either deliberately pulled out the packing or sneezed (?) it out, recovered more quickly than did those who retained the packing for any length of time (eight to twenty-four hours). In three cases the subsequent swelling and pressure by the packing (not properly done) produced necrosis with loss of mucous membrane and subsequent perforation. About that time I had the opportunity and good fortune to watch and assist Dr. Freer do several operations in his excellent manner. Subsequently I have observed most of our well-known surgeons and have received many valuable ideas and suggestions. In my private work I met many patients who had had partial nasal operations, all of which had been packed that, though they ought to have the septum made straight, most of them would decline because of the dread of the packing. In a few isolated cases I deliberately omitted the packing, but because it was so universally employed I did not feel like risking its omission. However, five years ago, I began to omit the packing, incidentally also to modify some steps of the operation, until to-day I think it absurd and unfair to the patient, and not creditable to the surgeon to inflict a useless punishment. At the 1912 A. M. A. meeting at Atlantic City, I protested against the packing and was astonished that no one else then present had tried the method. Dr. G. D. Richards of Fall River, Mass., was the only one who was acquainted with the method, and that came from European surgeons. Dr. Freer stated that "if anyone wants to let his patient bleed to death, he might leave out the packing." Dr. Loeb stated that he would hold me responsible for patients bleeding to death. I had no opportunity to answer these remarks then, but shall do so now.

The principle reasons for the employment of packing after submucous resection are, prevention of hemorrhage, hematoma and infection. If the technic can be so simplified and perfected that after a moderate amount of experience a resection of a part or all of the bony and cartilaginous septum can be performed without tearing the mucous membrane to any material extent, then the question of hemorrhage does not come up. It has been found that by resecting through one aperture which can afterwards be completely closed by sutures or pressure, the rest of the mucous membrane not being torn, no hemorrhage can take place. The completed field of operation will then resemble a sac with an opening at one end. Even if numerous small holes are cut in the mucous membrane these will close with blood-clots if there happens to be free bleeding within the septum, but if an extensive tear takes place then packing may be needed to stop the leak. As the blood gathers in the inter-septal space it soon fills it completely and acts as a packing, but when the bleeding vessels have been closed the inter-septal clot dissolves and flows out through the aperture or is absorbed. Usually it disappears after the third day. About three hours after completing the operation the mucous membrane on the turbinates begins to swell and as the swelling increases on both sides pressure is put on the septum, often so considerable that it resembles a packing. This swelling also helps to squeeze out the blood that may be within the septum.

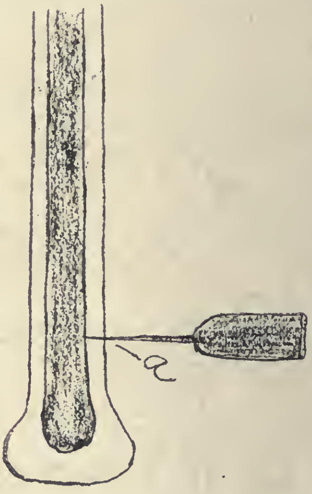

Figure 1—a. Primary incision in mucous membrane at right angle to plane of septum.

Hematoma does not occur if there is free drainage. The blood-clot which may form within the septum will soften and escape within one or two days through the primary incision. Furthermore, if the nose has been packed after the operation, when the packing is removed, which is usually long before the mucous membranes have begun to adhere, the inter-septal space is filled with blood or serum which does not escape with as great ease as it would through the primary incision without packing.

About three years ago, while talking about this same subject with Dr. Ballenger, he told me that he had just been informed by a confrere that a hematoma had occurred after removing the packing. In watching many operators in many clinics, and in their private work, I found the same as in my own practice, that, if the packing remained twenty-four hours, the nose would be swollen shut for the next three to five days, and sometimes longer, with a much greater discharge of pus or mucus than when the packing is not employed. This swelling was always due to accumulation of blood or serum between the septal mucous membrane and the swelling of the mucous membrane of the turbinates which by reason of the irritation from the packing and its removal also produced an excess of mucus.

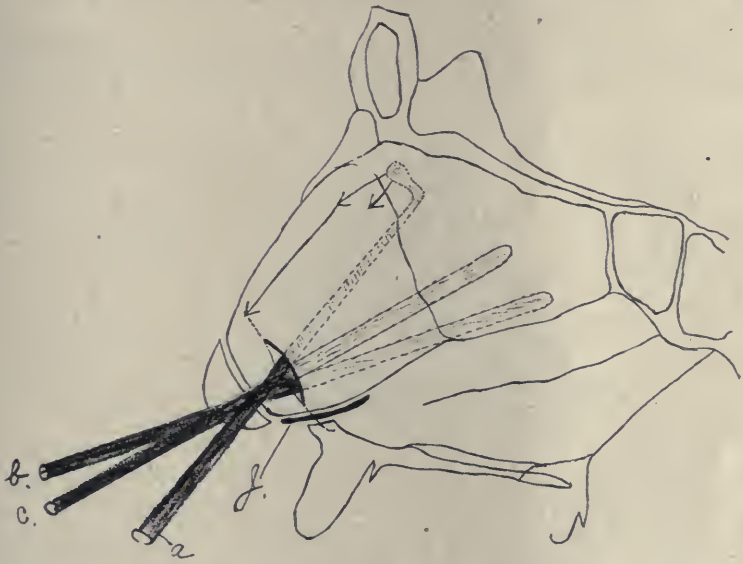

Figure 2—a. Right angle elevator pulling forward toward tip and up to primary incision—b. c. Elevating mucous membrane above vomerian crest. J. Jacobson's cartilage (schematic).

Statements have been made that infection is more apt to occur without packing. It is not likely that packing has any bearing at all on infection. It surely is more safe to allow free drainage than to close up the cavity with packing if infection should take place. I have never had a case of infection of the septum following a submucous resection nor have I seen a case at any clinic. Infections do occur, but so rarely that they might be entirely ignored, especially if the operation can be performed under favorable conditions and the patient can lend intelligent co-operation.

In an experience of more than 500 cases, no hemorrhage, hematoma, or infection of the septum has occurred, so that theoretically it may seem wrong, practically it has been proved right to omit packing.

In the description of the author's technic, much has been borrowed from different surgeons, a few original suggestions have been added, and the operation systematized to save time and obtain the safest and quickest cure.

The following description is intended for the most complicated overlapping, dislocated and fractured septi. The simple cases need no discussion at this time. Pathology, or the mechanical production of the deformity is not considered.

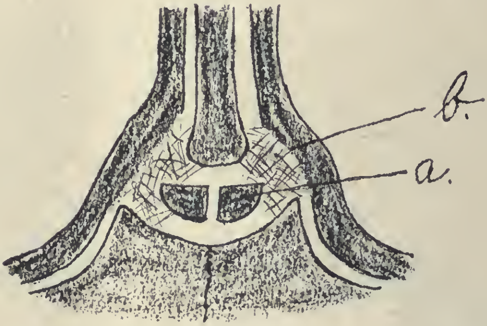

Figure 3—a. Schematic representation of Jacobson's cartilage. b. Fibrous connection to septal periosteum, which should be cut with Steven's tenotomy scissors.

Position of patient: I prefer to have the patient sitting up during the operation. There is less bleeding and the patient can assist by blowing his nose, etc. I am less fatigued with the patient upright than when operating with the patient in the recumbent position, and the position seems more natural to me.

Time for operation: Usually between 7 and 9 a. m., so that patient may have a full meal in his stomach; the systemic effect of the cocain is less disagreeable, and if anything should arise demanding our attention all day is at our disposal.

Time required for operation: Average time is forty-five minutes, including preparation, operation, and immediate after-care. Many cases have been completed in fifteen minutes; a few cases have taken two hours.

Anesthesia: Flake cocain is used alone, applied three or four times in small quantities, until the tolerance of the patient becomes manifest, and when the patient is fully anesthetized and not sick from the cocain and everything ready for the operation, I then apply adrenalin, not before. I make another application of cocain, and then operate.

In all my experience I have had practically no bleeding during the greater part of the operation; it only occurred when the anterior end of the vomer or maxillary crest was broken or cut, the bleeding from which is easily controlled by pressure for a moment, unless I used the adrenalin too early, in which case I often had very annoying bleeding. I always wait long enough after the primary cocanization to give the patient a chance, if necessary, to get over the nausea or vomiting before using the adrenalin and before operating. It takes a little longer to get started but saves time in the end.

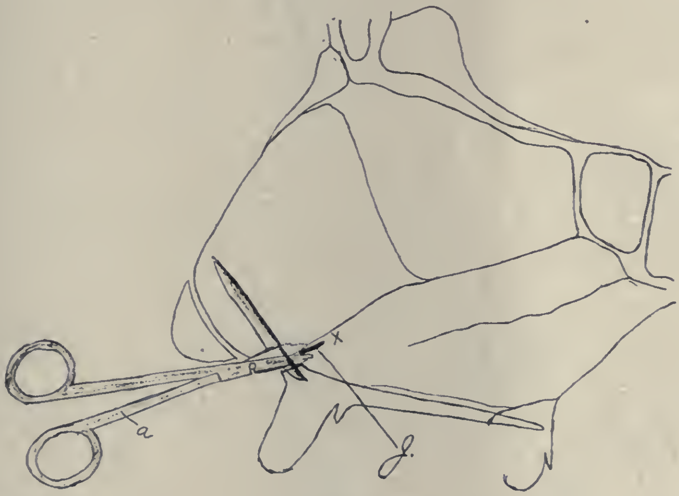

Figure 4—a. Steven's blunt-pointed curved tenotomy scissors, cutting fibrous tissue over suture at incisor crest, and Jacobson's cartilage as far back as x. It can also follow vomerian crest back of x, and cut off edge of spur or ridge without perforating mucous membrane. J. Jacobson's cartilage (schematic).

Technic: The primary incision is made about verticle, and one-half inch long, pointing down towards the middle of the incisor crest. This primary incision in the mucous membrane is made at right angle to the surface, (Figure 1 a.), Elevation of mucous membrane is made by first scraping or pushing the perichondrium from the cartilage, so that the cartilage is distinctly visible within the primary incision. The mucous membrane is then elevated backwards, above the vomerian crest and up to the upper border of the deflection, (Figure 2 a. b.). With my right-angled elevator, made for me by Ermold, N. Y., in 1903, from a S. S. White dental burnisher, which Ermold bent at right angles and which I am still using, (see THE LARYNGOSCOPE, 1907), I elevate the mucous membrane up to the roof of the nose, below the bridge, and forward to the primary incision, (Figure 2). The primary incision is then extended upwards to near the roof of the nose, with knife or scissors, (Figure 2), and then extended down to the incisor crest and out about one-eighth inch across the floor of the nose down to the bone, (Yankauer, Figure 2). The periosteum above, below, and over Jacobson's cartilage (Gray, Quain, Gerrish, Figure 3 a.) is separated from the bone and cartilage with Stevens' dull, pointed tenotomy scissors bent on the flat, the points of which hug the bone and cartilage and cut the fibrous tissue connecting the periostium to the sutures at the incisor crest in the region of Jacobson's cartilage,

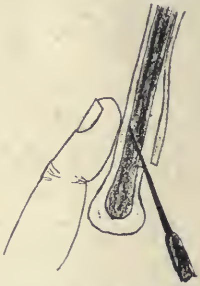

Figure 5. Incision in cartilage at angle of 45 degrees to plane of septum. Finger on other side feels pressure of knife point.

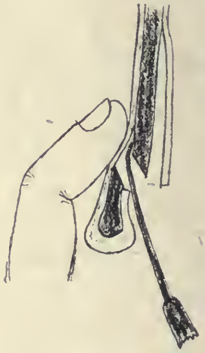

Figure 6. Elevator pushing anterior portion of incised cartilage to left, and the blunt-pointed bent elevator directed against the cartilage. Finger pushes on posterior portion of incised cartilage to right side.

(Figure 4). This dissection with the Stevens' scissors is continued backwards to the posterior end of the incisor crest (Figure 4 x.), With a dull, narrow elevator the floor of the nose, adjacent to the septum, is elevated as far back as the deflection extends, (Figure 6). By gradually working upwards, the mucous membrane at the angle of the septum with the floor of the nose is elevated up to the edge of the deflection or to the vomerian crest. The mucous membrane, usually very adherent to the edge of the deflection or vomerian crest, is separated in the anterior portion with Stevens' tenotomy scissors, the posterior portion may be left until later, unless nostril is of large size and deflection easily reached. In such a case any elevator will separate the periosteum from the bone.

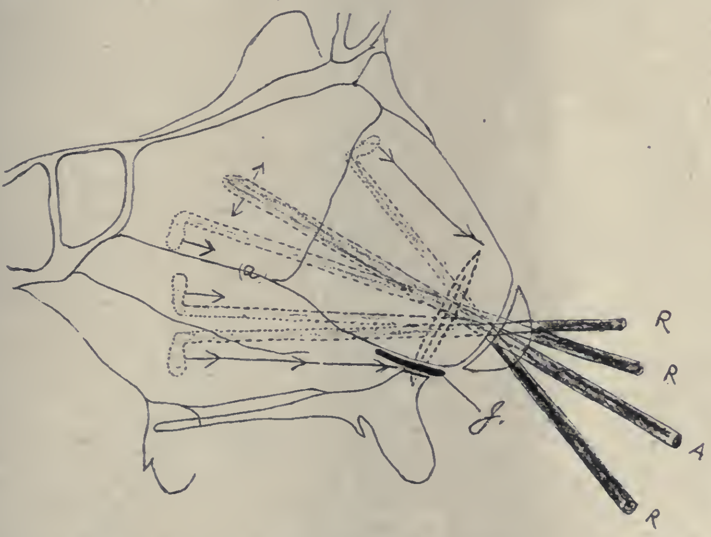

Figure 7—A. Elevation of periosteum on concave side. R. R. R. Right angle elevator used forward after periosteum is raised up, above vomerian crest (a). J. Jacobson's cartilage (schematic).

The incision in the cartilage is as near to the primary incision as deflection demands (usually about one-sixteenth inch behind primary incision in mucous membrane), but at an angle of forty-five degrees to the plane of the septum, instead of at right angles, as in the case of the mucous membrane, and only one-fourth inch long. (Figure 5). One finger is then placed in the opposite nostril behind the incision, on the concave side, and pushes on the deflection so that the incision in the cartilage gapes, (Figure 6). The point of a blue-pointed elevator with the tip bent on the flat is pushed into the incision of the cartilage and while pushing against the cartilage anterior to the incision with the bend or heel of the elevator, the tip is directed against or towards the cartilage of the septum (never against or toward the mucous membrane) and as soon as the tip disappears from view the finger in the concave nostril feels the elevation. At this point ocular inspection of the concave side must take place to be sure that the septum was not perforated, cut nor torn. If the elevator is properly insinuated between the perichondrium and cartilage, it is pushed backward as far as the deflection demands and elevates the mucous membrane about one-half inch in width above the vomerian crest, (Figure 7 a.). My right-angled elevator, (Figure 7 RRR), is then inserted and the periosteum elevated above and forward to the incision in cartilage. The incision in the cartilage is then prolonged upwards to about one-fourth inch from the bridge of the nose. The right-angled elevator is again pushed way back and begins the difficult but, compared to other methods, safe and rapid elevation of the mucous membrane forwards, but must always be in plain view of the operator, (Figure 7 R. R. R.). Remembering that the fibers connecting the vomerian sutures to the periosteum run out and back (Figure 8 a.) by pull-

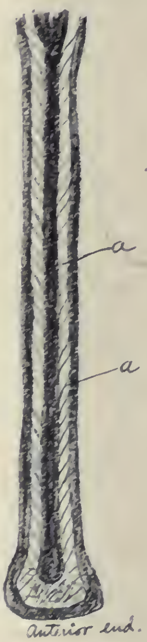

Figure 8—a. Showing direction of connecting fibers of bony septum and periosteum, especially over the vomerian crest and in the region of Jacobson's cartilage. Periosteum most easily elevated from behind forward.

ing forward, these fibers guide the instrument in against the bone, and no matter how scarred or grooved the concavity of the septum may be, the right-angled elevator separates the mucous membrane from the bone and sutures, way down to the floor of the nose, as far forward as the anterior end of the incisor crest, with no likelihood of perforation. The incision in the cartilage is now prolonged down to the incisor crest. The mechanical reason for using my right-angled elevator so much and using it from behind forward, is, that by resting your fingers on patient's face and pulling forward, you have an absolutely firm and fixed position with great power and perfect control of every movement, and to perform a perfect resection absolute control of every detail must be at the command of the surgeon.

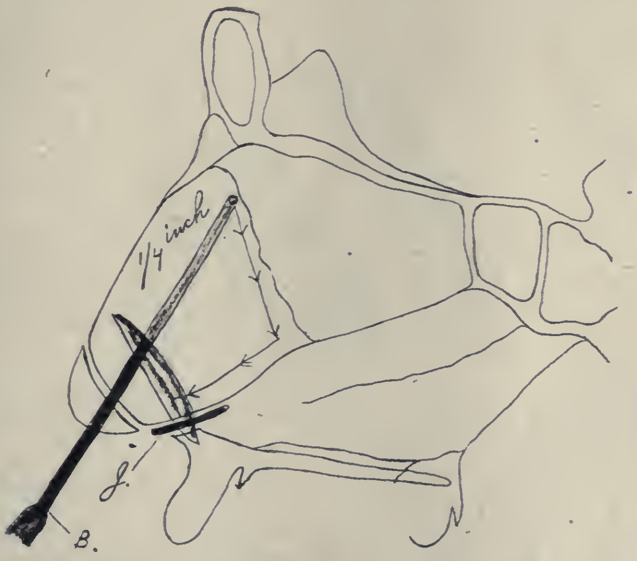

Figure 9—B. Ballenger's swivel knife or straight tenotomy scissors cuts cartilage upwards, parallel to bridge of nose. (⅓-inch below bridge). J. Jacobson's cartilage.

Ballenger's swivel knife or a straight tenotomy scissors, is then used to cut the cartilage above, parallel to bridge of nose, (Figure 9 B.) but whatever instrument is used, it never cuts higher than one-fourth inch from the upper border of the cartilage of the septum, or bridge of nose; the rest of the cartilage is removed with one sweep. With Killian's duck-bill forceps, or any other punch or forceps one may prefer, the upper portion of the bony septum (perpendicular plate of ethmoid) is removed as far back and up as the deflection demands. If the crest of vomer, or the vomer itself, or the vomero-maxillary suture, or maxillary crest is thick, so that it cannot be fractured with some form of forceps, a gauge or chisel is placed against the incisor crest at base of primary incision in mucous membrane, and the vomer lifted up from its attachment with the maxillary bone, or if too thick, scales or pieces of bone are cut away with chisel or forceps, until all the deflection is removed. Often it saves time and is much easier if only the sides of the lower flaring lips of the maxillary crest are removed, leaving the central portion as it normally stands.

When the bony deflection has been made loose above and below, the mucous membrane can more easily be separated from any sharp ridge, spine, or spur. In cases of long, sharp ridges, with very adherent mucous membrane, the Stevens' scissors will cut off the edge, which is usually cartilage, and this strip is left adhering to the periosteum, if it tears during dissection, (Figure 10a.). The interior is carefully cleared of particles of bone, though I never saw any difference if spicules of bone remained, either in my operations or in the cases of other surgeons—for they amount practically to the same thing as bone-graft.

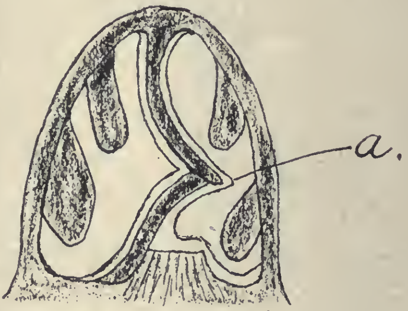

Figure 10—a. Sharp spur to left, cartilage and bone fractured and overlapping. Apex of ridge at (a) may be cut off with Steven's scissors and left attached to periosteum.

Usually two black-silk sutures are then placed in the mucous membrane (Figure 11), one in the middle (a), the other at the angles on the floor (b), taken deep in the mucous membrane, so that the cut edges can be well approximated. The advantage of the right-angle cut in the mucous membrane is evident at this point, in that flat edges meet.

A plug of cotton dipped in vaseline-paraffin. is then placed over the incision; this can be removed in a few hours or whenever the patient wishes, and can be omitted entirely in some cases. The sutures are removed on the third day.

From experience, I have found it absolutely necessary to leave some of the cartilage resting on the incisor crest, because there will otherwise be some recession backwards, at times considerable, and a falling down of the tip with flattening of the nose. This is especially true if the cartilage is removed closer than one-fourth inch from the bridge of the nose, in which case, if absorption of the remaining cartilage takes place, the support to the nose is gone. If, however, more than one-fourth inch is left to support the bridge the anterior support may be removed. The more the septal cartilage is twisted on itself under the bridge, the more must be left to the deformity e. g. modefied Ash or Gluesing, this to be followed later by a resection. In case the incision through the cartilage penetrates the mucous membrane on the other side, make a new incision further back, bevel this more and curve it so that cartilage is left to cover perforation. The best and most comfortable adjunct in a tedious and difficult operation to the surgeon as well as to patient, is a well-trained nurse, who steadies the head of the patient and keeps it in any desired position, whether the patient sits upright or lies recumbent on the operating table, but I have found no need at any time of the services of any one to wipe away the blood if care was taken to follow the above technic in regard to the use of the adrenalin.

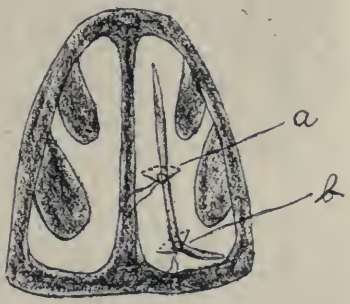

Figure 11. Two suture (a, b) placed in mucous membrane after completed operation.

This technic will cover nearly every form of deflection, and to illustrate the special points and advantages and rapidity of recovery without packing, a few cases presenting extreme difficulty, or cases that have special bearing on the subsequent healing without packing, will make plain my contention that the packing is superfluous.

Case 1: Miss D., aged 16. Anterior end or tip of cartilage of septum broken, and at right angles with septum dislocated to left of maxillary crest (b). The fractured and dislocated tip of cartilage was incised all around, so that it was freely movable, and all resiliency of cartilage was destroyed. A pin was then run through it, back into the cartilage of the septum and thus retained until union in new position was firm, which took about two weeks, after which a plug of cotton was put in other side, holding it over another week. After two weeks more, a typical submucous resection was performed, as above described. In this case both nostrils were very small and did not permit the use of any but the smallest specula.

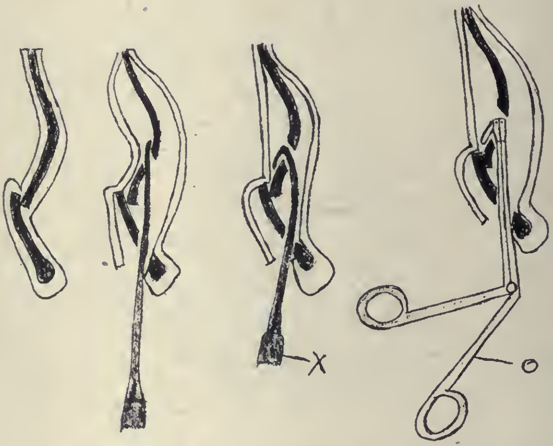

Figure 12. (Case 10). Extreme vertical fracture followed by overlapping. Total occlusion of both nostrils. Schematic drawing explains technic. X. "fish-hook elevator. O. Ostrom's reverse antrum forceps.

Case 2: Mr. V., manufacturer, man whose time was very limited. He was operated on a Wednesday, at duty in his office on Thursday, stitches removed Friday, and in the evening went to New York, to attend to important business, without losing a minute or suffering any discomfort. Mr. V. represents a very large class of business men who need the operation, but cannot spare the time, but with this technic they can almost be assured that they can be at their business in three days.

Case 3: Mr. S., age, 64. Not a good patient on account of age and complicated deflection, demanding very extensive removal of bone. Operation at his residence, with practically no loss of blood and, except for stoppage of nose from after-swelling for the following three days, patient suffered no inconvenience. Mr. S. represents advanced age, and that class of patients in whom a positive prevention of pain and bleeding is necessary.

Case 4: Dr. B. Extensive removal of nearly all of bony cartilage. Next day after operation made usual calls, and on the fourth day attended to the threshing on his farm in Minnesota.

Case 5: Mrs. L., has been under treatment in the Tri-City Sanitarium for many months; referred to me by Dr. Otis; extremely nervous. The reaction and shock from operation, the worry prior to operation, and the cocain, though there was no evidence of any shock or any effect of cocain during operation, caused patient to be confined to bed for next four days because of headache and nervousness. When I saw her on the fifth day, septum had healed together by first intention; her nose had at no time after the operation been stopped up; there had been no discharge and there was no sign of swelling or scabs on septum. In this case nearly the entire bony septum was removed with primary healing.

Case 6: A. J. A. Total occlusion by extreme deflection of entire septum. An active gumma was present and had partially broken down .the mucous membrane, but not the periosteum, on convex side; elevation was made without tearing the periosteum at any point. The vomer and ethmoid was soft and mealy, coming out in large pieces without any trouble. Conditions were present that made it compulsory to operate at this time without waiting for specific treatment. However, specific treatment was started a few days after operation, and the septum as well as gumma was healed in less than two weeks. The patient felt better after operation than ever before, both because of free nasal respiration and specific treatment.

Case 7: G. R., farmer; cartilage dislocated to left side of nasal crest, with a long ridge resting against left lower turbinate and on floor of nostril. Upper portion of cartilage bulged into right side entirely occluding upper two-thirds of passage. Though this was an extremely extensive exenteration, the patient was permitted to take a train two hours after the operation, to Wilton Junction, forty miles away, with perfect safety as regards bleeding. I saw him on the third day, and on the fourth day he was back at work husking corn.

Case 8: Wm. S., aged 13, Verticle deflection of cartilage with horizontal deflection of bone, to right side, with almost total synechia following previous cautery operation by some other doctor. In this case general anesthesia was used. Periosteum over cartilage was not perforated at point of synechia, which was first cut, then resection performed, as though no previous surgical injury had taken place. Synechia reformed, but was separated with a probe, and septum remains straight.

Case 9: E. S. (insane). Total occlusion of left nostril, following previous cautery, with verticle deflection of cartilage, and horizontal of bone. Absolute occlusion of both sides. Patient was restrained in hospital for two days following operation, then went home ten miles in the country. The results are perfect, and the patient, though insane at time of operation, and about one month later placed in insane hospital, had no discomfort nor trouble after operation.

Case 10: J. M., theological student. Verticle deflection with over-lapping, almost at right angle to plane of septum (Figure 12), and horizontal deflection of vomer with dislocation. First elevated mucous membrane to end of over-lapping cartilage (Figure 12 a.). then incised cartilage (b), and elevated mucous membrane on concave side (c), where also there was a deep horizontal groove. Incised cartilage behind over-lapping cartilage (d), in concave side. Elevated mucous membrane beyond on convex side (e), and removed the cartilage behind the second incision (d). Then an elevator bent back like a fish-hook (f) elevated the mucous membrane forwards to overlapping ridge without any perforation, and this part of the cartilage was then removed with my reverse antrum forceps (g). Though the septum was at least one-half inch longer in verticle direction, by reason of tremendous deflection, than the distance from the roof to the floor of the nose, and though it was filled with blood-clot after operation, in four days' time most of the septum had adhered, and in one week but very little thickening remained. Operated on Saturday, back in school next Monday. The walls seem to have shrunken, which does not seem to take place when packing is employed.

Case 11: J. A., ex-prize fighter; squashed nose, split cartilage, with obstruction of many years' standing totally occluding nose. In such cases I always leave at least one-eighth inch of anterior edge of septum (c) down to the incisor crest, so that the tip has a good support. I also leave as much as possible above (e), so that the bridge will not sink in. After removing cartilage on one side and intervening tough fibrous tissues (d), cartilage on the opposite side is incised and the mucous membrane elevated backwards then forwards with the "fish-hook" elevator and easily removed with my reverse antrum forceps, as far forward as needed. A plug of cotton is used in such cases to plug up both nostrils for twelve hours. None of my cases show any evidence of the "squash" two months after the operation.

Conclusion: Adrenalin must not be used until just before you are ready to operate in order to obtain a bloodless operation. The complete primary incision will produce as large an opening as the nostril, and when brought together with sutures, heals with no intervening granulating surface. The mucous membrane must be incised at right angles to surface, and the cartilage incised at an angle of forty-five degrees. Periosteal elevators must always point toward or against the cartilage or bone, never against or towards the mucous membrane. The fibrous adhesions of periosteum to suture at region of rudimentary vomero-nasal or Jacobson's cartilage must be cut, and the bent tip of Stevens' tenotomy scissors will most easily follow the bone and cartilage and not get lost. It is at this region where I have seen laceration of the mucous membrane at every clinic I have visited and the point where scabing keeps up longest if healing must cover a wide gap. Packing cannot be placed uniformly on septum. Usually the upper one-half or one-third is never packed. (My observation at all clinics and numerous operations.) The most painful part of any nasal operation is the post-operative swelling with, and the extraction of, the packing, with the added danger of general sinus infection. Hemorrhage cannot take place unless the mucous membrane is so mutilated that an open wound is produced. Packing will then be necessary to prevent bleeding after operation, but an equally severe or even worse hemorrhage may take place on removal of packing, calling for repacking and repetition of the first trouble. Hematoma does not occur if there is free drainage; all blood will escape from septum in two to five days, usually after the third day. In case of infection, drainage is already prepared for. I have seen no infection of septum after resection. The mucous membrane of the turbinates may be injured by pressure from packing, and especially on its removal, producing synechia. Hematoma (so called) often occurs after removal of packing. With correct technic there is no need of packing. When the mucous membrane is torn to any considerable extent packing should be used.

A SIMPLE SUBMUCOUS LEDGE OPERATION.

DR. RICHARD H. JOHNSTON, BALTIMORE.

The operation of choice for ledges and spurs at the Presbyterian Hospital is one which I have never seen described in any book on diseases of the throat and nose. That an operation which saves mucous membrane is far superior to the saw or the spoke-shave, both of which tear and mutilate the covering of cartilage and bone admits of no argument in modern rhinology. After trying various operation for ledges and spurs, I devised one which I believe will be found ideal for thickenings on the anterior septum. According to the size of the ledge, Hajek's large, medium, or small chisel is selected. This is placed on the membrane in such a position that the cartilage, bone and membrane will be cut through below while the membrane above is left intact in the form of a hinge as it were. After the chisel is driven through the mass, it is withdrawn without making any attempt to force the ledge away from the septum. If the ledge is pushed away from the septum, the next step of the operation is rendered more difficult. We now have a flap consisting of bone, cartilage and mucous membrane, free below, and attached to the septum above. At this stage Freer's sharp elevator is used to lift the membrane from the cartilage, which is usually accomplished in a few seconds. With the flap pushed up and out of the way we are ready to remove the cartilage which is seized with strong forceps and twisted out. If a hump appears above after replacing the membrane a curette or rasp soon removes it, without endangering the membrane. The membrane is replaced, the nostril packed and in forty-eight hours the wound has healed. The operation is more quickly done than by using a knife to cut through the membrane first. The chisel makes a perfect incision of the membrane as far back as the ledge extends. By making use of this simple procedure, one is able in selected cases to dispense with the submucous resection of the septum. It is easy with the curette and rasp to remove all the septum below without injuring the membrane on the opposite side. Then by cutting through the septum above, it can be swung over and held in place by a splint until healing takes place.

807 North Charles Street.

VINCENT'S ANGINA.*

DR. GERARD HUTCHISON COCKS, NEW YORK CITY.

In spite of several excellent articles on Vincent's angina which have recently appeared in medical literature, the majority of practitioners and many laryngologists fail to recognize this disease. The reason lies in the well-nigh universal practice of making the bacteriological diagnosis from the examination of a culture without the aid of a smear. The bacilli and spirilla of Vincent do not grow on the ordinary culture media, hence Vincent's angina cannot be diagnosed unless a smear is made.

These organisms, the fusiform bacillus and spirillum, now generally known by the name of Vincent, were first described by Rauchfus[1] in 1893, in cases of ulcero-membranous angina. In the same year Babes[2] described the occurrence of these same organisms in the gums in scurvy. Plaut,[3] in 1894, described five cases of ulcerative angina. In 1896, Vincent[4] described cases of hospital gangrene associated with the spirillum and fusiform bacillus, and stated that they were also found in ulcerous angina. In 1898, Vincent reported fourteen more cases. In 1897, Bernheim[5] reported a series of 30 cases of stomatitis and angina characterized by the occurrence of the same organisms. In this country, Emil Mayer,[6] Berkeley,[7] Arrowsmith,[8] Halsted,[9] Holm,[10] Oertel[11] and others, have contributed excellent papers on this subject.

Vincent's spirilla and bacilli, in addition to being present in angina and cases of stomatitis, have been found in mastoiditis (Yates[12]), in chronic suppurative otitis media and meningitis (Held[13]), and in abscesses of the lung, liver, and spleen by Schmorl.[14] They have also been identified in a tonsillar abscess by Plaut. Arrowsmith found them in the larynx. They are present about the pulp of carious teeth and are often found in the crypts of diseased tonsils.

Bacteriology:—According to Holm,[10] "the spirilla and fusiform bacilli have been regarded by most writers as two distinct organisms. Recently Ruth Tunnicliffe's studies have apparently proved that the two are different forms of the same organism. The organism is extremely polymorphous and presents many intermediate forms between the typical spirillum and the fusiform bacillus. It stains fairly well with the common stains, and is usually said to stain best with carbol fuchsin. The spirilla are very easily decolorized by Gram's method; the bacilli give up their color less easily. The fusiform bacilli may be readily differentiated from diphtheria bacilli by Gram's method of staining."

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*Read at the annual meeting of the New York State Medical Society, Section on Diseases of the Eye, Ear and Throat, Rochester, N. Y., May, 1913.

According to Berkeley,[7] the spirillum and bacillus of Vincent, like the diphtheria bacillus, micrococcus lanceolatus, and other organisms, occur as saprophytes in the mouth in health.

The number of cases of Vincent's angina encountered in the course of a year depends to a great extent on whether the physician is on the lookout for this particular disease. In one of the large institutions of New York City, the last annual report mentions over 7,000 cases of diseases of the pharynx and naso-pharynx treated in 1912, with but three cases of Vincent's angina. This looks like carelessness on the part of the examining physicians.

Holm,[10] the bacteriologist of the Michigan State Board of Health, reports the examination by culture and smear of 265 cases of suspected diphtheria, which I shall report in detail: Diphtheria bacillus, 118 times; bacillus fusiformis, 73 times; 33 patients were males: 40 females. The lowest age was 2 years; the greatest, 55; the average age was 18 years. All but 4 cases had a membrane which involved both tonsils in 38 cases and one tonsil in 31 cases. In 15 cases the membrane extended to adjacent structures. The color of the membrane was described as gray or grayish, in the majority of instances.

Of Holm's entire series of 265 cases, the diagnosis of diphtheria was made on clinical grounds in 99 cases. The bacteriological report of these 99 cases showed B. diphtheria present in 64 cases; absent in 35 cases. These 35 cases of pseudo-diphtheria showed B. fusiformis 27 times. Of the 73 cases showing B. fusiformis, diphtheria was diagnosed clinically 28 times. As a matter of fact, in only one of these 28 cases the diphtheria bacillus was present. In the other 27 cases the diphtheria bacillus was absent. These figures emphasize the similarity, clinically, of Vincent's angina and diphtheria.

Etiology:—Lowered bodily resistance, diseased tonsils, teeth, and gums, act as predisposing factors in the production of Vincent's angina. The exciting cause is the fusiform bacillus and spirillum of Vincent, which are found in almost pure culture at the height of the disease. Vincent's angina is usually regarded as mildly contagious. Mulholland[15] reported twenty-four cases occurring in one ward of the New York Foundling Hospital, in children under 5 years of age. He concludes that the disease is fairly contagious in young children, and that its communicability is favored by institutional life. Curiously enough, none of the nurses who attended the children contracted the disease.

Pathology:—The membrane of Vincent's angina is a pseudomembrane; due to necrosis of the superficial layers of the epithelium (Ballenger[16]). This membrane is usually gray or grayish white. If the membrane is removed, an ulcerated spot is seen, which bleeds easily when touched with the cotton applicator.

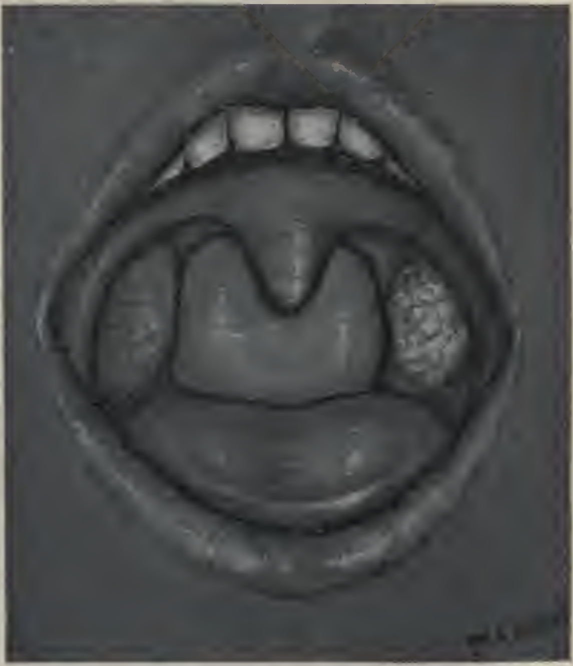

Figure 1. Vincent's angina, left tonsil.

Vincent's angina may be associated with diphtheria and syphilis, and is often accompanied by stomatitis. In February, 1913, Dr. F. E. Sondern[17] read a preliminary report before the Section on Medicine of the New York Academy of Medicine, entitled, "Blood Changes in Vincent's Angina." Dr. Sondern kindly sent me a copy of this paper dealing with the blood changes observed in seven cases of Vincent's angina. In five of these cases the characteristics noted were, "A pronounced relative lymphocytosis on differential count, resembling that of a chronic lymphatic leukemia without the leucocytosis usual in that disease." In the first case, he has records of previous blood examinations which showed normal findings up to seventeen days before the onset of the Vincent's angina. On the third day of the disease the blood count in this first case was as follows: Red blood cells, 4,800,000; white blood cells, 12,800; hemoglobin, 66 per cent; small lymphocytes, 69.9 per cent; large lymphocytes, 23.2 per cent; polynuclears, 6.9 per cent.

Two of Sondern's cases started as cases of Vincent's angina showing the usual throat lesion and the same relative lymphocytosis without leucocytosis. The condition of these two patients gradually became worse, and the blood picture gradually became that of acute leukemia, from which both patients died. In neither patient, however, did the leucocyte count become very high (32,000 and 49,000). Sondern concludes from these cases that there must be at least a suspicion of a posible relationship between Vincent's angina and lymphatic leukemia. Unfortunately, my own cases were observed before Sondern's report, so I have not yet had an opportunity of verifying these blood findings personally.

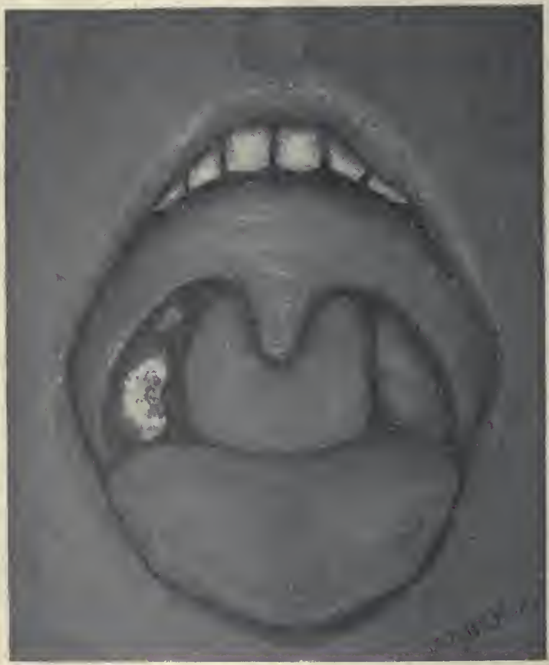

Figure 2. Vincent's angina. Same patient six weeks later, showing recurrence on the right tonsil.

Symptoms:—There are two types of cases: First, the mild, or tonsillar type; and, second, the severe cases where the membrane extends to extra-tonsillar structures.

In the mild cases, the patient, usually a young adult, complains of chilly sensations,—rarely, a chill,—at the onset, pain in the tonsillar region on swallowing, perhaps general malaise, and slight fever, 99° or 99.5° F. The submaxillary or cervical glands on the affected side are usually enlarged. These mild cases react readily to local treatment and usually disappear in from one to two weeks.

The picture here shown (Figure 1) shows the throat lesion in a patient with a characteristic history. Joseph D., single, 21 years of age. Twenty-one days ago began to suffer from pain in the left side of his throat on swallowing. He also noticed some swelling of the neck on the affected side, and has been slightly feverish. On examination, the upper two-thirds of the left tonsil was found to be the site of a grayish-white membrane, which upon removal showed an eroded area. A smear demonstrated typical fusiform bacilli and spirilla of Vincent in immense numbers. The lesion yielded in about ten days to local applications of ten per cent silver nitrate. About six weeks later the same patient returned to Dr. Chappell's clinic at the Manhattan Eye, Ear and Throat Hospital with a small patch on the right tonsil (Figure 2). Bacteriological examination again showed Vincent's organisms. The left tonsil, the one first attacked, was normal. As I wished to try the effect of salvarsan in this disease, the patient was given a full dose of this drug, intravenously, and local treatment was withheld. The lesion promptly healed.

The severe cases of Vincent's angina are accompanied by extensive lesions, often involving one or both tonsils, the pharynx, uvula, and soft palate. The breath is very fetid, the pain and prostration extreme. The temperature, though generally said to remain fairly low, sometimes reaches 105° F. (Case observed by Rolleston[22]). Reiche,[21] in a study of twenty-seven cases of Vincent's angina, found the spleen easily palpable in two cases. In six instances it was greatly enlarged. In three patients, traces of albumin were found in the urine. In five urinalyses acetone was found, twice.

A number of fatal cases of Vincent's angina have been reported. Our Secretary, Dr. Halsted, has recently reported two fatal cases in The Laryngoscope. Stocklin[23] reports a fatal case in a female, 22 years old, who died from an acute fulminating attack. Bruce[18] also reports two fatal cases, one, an 8-year-old boy with an ulcerous angina of the left tonsil which spread over the entire pharynx. This patient died on the eighth day of the disease. In Bruce's second case, the necrosis extended beyond the thyroid cartilages of the larynx and the child succumbed to broncho-pneumonia. Von

Ellerman[19] and Eichmeyer[20] report severe cases with gangrenous lesions in the mouth, associated with septic complications which were the cause of death. F. Reiche[21] reports a case occurring in a boy, 9 years old, with a pseudo-membrane on the tonsils and tonsillar pillars, which resulted fatally on the twenty-seventh day of the disease, death being due to myocarditis.

Differential diagnosis:—Vincent's angina must be distinguished from diphtheria, syphilitic ulcerations, and streptococcus anginas. The resemblance to these lesions is often striking. The only sure way to differentiate is to make a careful bacteriological examination by both smear and culture. If necessary, a Wassermann test should also be made.

Halsted has called attention to the fact that the deep ulcerations occurring after scarlet fever and diphtheria, due to Vincent's bacillus, are often erroneously supposed to be due to the Klebs-Loeffler bacillus or streptococcus which caused the original disease.

The *prognosis* as to speedy recovery is excellent in the tonsillar cases, which usually clear up in from ten days to two weeks. When unilateral the disease is apt to recur on the opposite tonsil. Recurrence took place in two of the four cases the writer treated during the past year.

In the severe type, the prognosis should be very guarded, as many of these cases show but little improvement with the remedies at our command. Some, as we have noted, even result fatally.

The prophylactic treatment of Vincent's angina embraces care and attention to the condition of the teeth, gums, mouth and tonsils. In the actual treatment of the throat lesion, various antiseptics have been used, such as hydrogen peroxid, tincture of iodin, Lugol's solution, applications of silver nitrate, chromic acid, etc. Orthoform tablets are useful in alleviating the dysphagia. Recently, salvarsan has been used, both locally and intravenously, the theory being that Vincent's angina is a spirillum disease. In the one case where the writer administered salvarsan, the lesion promptly healed. However, this case was such a mild one that it is difficult to judge how much good was accomplished by Ehrlich's compound. Perhaps in the near future some of the members of this section will have opportunities to thoroughly test the efficacy of salvarsan in this disease.

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137 East Fifty-fourth Street.

Plea for Entire Removal of Enlarged and Diseased Tonsils. B. C. Gile, *Pa. Med. Jour.*. June, 1913.

Gile discusses briefly the three chief tonsillar operations (tonsillectomy, obliteration of the tonsillar crypts, and tonsillectomy) and compares them, leaning in favor of the last, though he points out its dangers and disadvantages. Three cases are reported.

Ed.

CASE EXHIBITING LARYNGEAL CRISES.*

DR. CLARENCE E. IDE, LOS ANGELES.

On October 3, 1912, Mr. C. R. H., telephone switchboardman, aged 40, consulted me because of the onset of double vision three or four weeks previously.

He reported his father had syphilis. In childhood he had measles, chicken-pox and was very ill at the age of 7, after vaccination—"the worst sickness he ever had." At the age of 18 he had chancres (supposed then to be soft), a papular eruption and "severe sore throat." Has been married fourteen years; has one son who is healthy; wife is well; has had no miscarriages. Reports loss of sexual power to a great extent. Has erection every night (loss of inibition) and finds it necessary to rise from bed for emptying of the bladder.

He gave history of trouble with eyes for twelve or thirteen years. Glasses had been changed frequently during that time—three or four times during the last six years. For some years he had suffered from a "nervous trouble" such that for the last three or four years his knees had been apt to go out from under him. For ten years he had had a "nervous cough in glottis," would cough and cough and then vomit. For five or six years he had suffered from "sour stomach." For eight years had laryngeal spasm so bad that he "would turn blue and drop to the floor"—this once a day or once a week. Gave up work as telephone lineman on account of these attacks.

There have been shooting pains in the legs and through the diaphragm. The left knee used to swell and become painful. Besides, there had been difficulty in controlling the bladder, involuntary micturition occurring at night.

Here is a case presenting a history of chancres, papular eruption, severe pharyngitis, loss of sexual power, chordee, incontinence of urine, Charcot joint, gastric crises, laryngeal crises, lightning pain in legs, band sensation at diaphragm.

Status praesens: I noticed ataxic gait as the man entered the consulting room. For the last three days there has been occipital and supra-orbital pain. For a month there has been double vision. He said: "Doctor, I can see two of you, but I am not drunk."

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*This case is reported simply because it presents laryngeal crisis.

There are scars in the pharynx. Examination elicits presence of Romberg's symptom, Argyl-Robertson pupil, ataxia of hands, absence of knee jerk, (patient reported that knee jerks had been absent for 14 years). Patient cannot walk at all with eyes closed, in fact, cannot stand without legs spread apart.

Eyes: Has bulging or "pop" eyes. Fundus normal (physiologic excavation pronounced). Vertical meridian of left eye inclines inward 5 degrees with Stevens' clinoscope. Vertical streak of light with Maddox rod inclines outward before left eye. Left hyperphoria of one degree, exophoria of 6 degrees. With the tropometer right eye moves outward 50 degrees, upward 40 degrees, left eye outward 30 degrees, up 40 degrees, in 60 degrees. Refraction distance: O. D.—.50 sph. with+.25 cyl. at 145°; O. S.—.25 sph. with—.37 cyl. at 180°. Reading: O. D.+2.25 sph. with+.25 cyl. at 145°; O. S.+2.50 sph. with—.37 cyl. at 180°. Diagnosis of monoplegia of the fourth cranial nerve was made and sat. sol K I prescribed at once. Wassermann test made next day was three times positive.

Patient was referred to Dr. Rex Duncan, who instituted treatment at once, making two injections of salvarsan, with intramuscular injection of mercury in the interval and since. On October 7, the clinoscope showed an inward declination of the left eye of only 3 degrees. On January 10, approximately three months after his first visit, the patient presented himself stating there was no longer double vision, but complained of return of laryngeal spasm, stating that the attacks appeared to follow the inhalation of dust. As the middle turbinates presented sensitive areas these were cauterized with chromic acid, to remove reflex irritation. On March 11, patient reported that when he talks fast or gets excited, he becomes "choked up," that he sneezes, coughs and gags all at once in the morning. There had been no attacks of laryngeal spasm.

On April 13, 1913, the patient comes with gait much improved and reporting great increase of weight as well as improvement in all directions.

332-3 H. W. Hellman Building.

SOME INTERESTING ESOPHAGEAL CASES.*

DR. W. P. MILLSPAUGH, LOS ANGELES.

The cases which I shall report are for the most part foreign body cases, in which the esophagoscope was used in the effort to remove the foreign body. In my judgment any other method of attempting to remove most foreign bodies is entirely unjustified except in localities where this method is unavailable.

This specimen, a nine-inch table knife, was taken from the first foreign-body case in which I ever attempted removal. An insane woman had succeeding in getting the knife into her esophagus, I suppose, as a sword-swallower does the trick. The knife stood, handle upward, with its tip about at the cardia. I should like to tell you how I grasped the handle with my forceps and drew the knife out of the esophagus amid the plaudits of the assembled doctors and nurses. But, instead, I am obliged to confess that I not only failed to extract it, but that I passed my tube the whole length of the esophagus and never once recognized the knife. Dr. Alden did a gastrotomy and removed it through the wound. It gives me some cold comfort to excuse this failure by explaining that this was my first case and that the tube I used—the only one I had at that time—was a gastroscope, 80 centimeters long, so that my eye was nearly a yard away from the object. But I am not proud of this case. The patient recovered promptly.

One of my early cases illustrates one of the dangers of esophagoscopy. This was a neurotic man, of about 25, with a history pointing to cardio-spasm. He was given one-fourth grain of morphin with atropin hypodermically and the pharynx was cocainized with about 4 per cent cocain. He was too nervous; I could not make the introduction; so ether was given. He went under nicely, but as the tip of the esophagoscope entered the gullet he ceased breathing and became intensely cyanotic, the pulse becoming extremely feeble. The tube was instantly removed, the head of the table lowered and stimulants applied. For several hours he lay on my office table with flickering pulse and embarrassed respiration, on the very verge of death. Finally I managed to get him into my machine and get him home, more relieved, I think, than I have ever felt at any time in my life. The man had a rather flabby heart, but not such as would ordinarily deter one from giving an anesthetic. I suspect that idiosyncrasy to cocain was at least a factor in his collapse; and I would sound a warning note: 10 per cent cocain is freely used in these cases; we must not forget the nature and danger of cocain.

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*Read before the Laryngological Section of the Medical Society of the State of California, April 16, 1913.

This photograph represents a tooth-plate extracted from a woman's esophagus a month after it was swallowed. The woman was to have a laparatomy; prior to the operation she denied having any false teeth, but when she came out from the anesthetic the two upper median incisors and their plate were missing, while the patient complained of dysphagia. No x-ray picture was taken; the patient was a phlegmatic woman of very moderate intelligence and she got along so well with fluid foods that even at the end of the month some doubt existed as to the presence of the body in the esophagus; but when the 53-centimeter esophagoscope was introduced, under ether anesthesia, the plate was readily found, almost opposite the manubrium of the sternum. The flat surface presented, with the edges well embedded in the swollen mucosa. I failed after several efforts to get hold of an edge, and handed the instruments to Dr. Richardson, who finally got a hook behind the plate and turned it until an edge presented; he then grasped this with the forceps, and tube, forceps and plate were withdrawn together. In spite of the length of time the plate had been in the gullet, in spite of its decidedly sharp corners and edges, and in spite of considerable force used in withdrawing it, the patient immediately recovered.

Tooth-plates are among the frequently swallowed foreign bodies. This specimen is a plate which broke in a man's mouth while he was eating. Before he could recover it, this smaller fragment had got a good start down the esophagus and lodged there. I saw him only a few hours after the accident, and had no difficulty in removing the plate, under ether anesthesia. A short Jackson's esophagoscope, which I had made especially for foreign body work, makes the manipulation much easier.

While on the subject of tooth-plates I will mention two cases which illustrate the ludicrous and pathetic sides of this work. The one case was an old man, of about 65, who felt something hard in his throat while eating and later missed his teeth. He came into the Receiving Hospital and Dr. McCoy and I explored his esophagus carefully without finding any teeth or any evidence of traumatism. He admitted later that he gone to the back door and spit out what was in his mouth, and as the x-ray failed to locate any teeth we concluded that he probably had found them in the back yard on his return home. This newspaper clipping in regard to this case demonstrates the reporter's idea on this subject, and the advisability of doing this work in some place beyond the reach of reporters. The examination took about twenty-five minutes in all; the reporter describes it as a fishing expedition lasting two hours, and the illustration looks like a 16-candle lamp suspended in the stomach.

The second pathetic case was a poor woman who came fifty miles to me to be relieved of a tooth-plate which she was supposed to have swallowed seven years before. Though the history of this accident and subsequent symptoms was doubtful in the extreme, yet all her trouble since that time had been ascribed to the offending tooth-plate, including a far advanced pulmonary tuberculosis with tuberculosis of the ribs which had necessitated removal of three of the ribs. She brought with her an x-ray print, entirely negative, in which two or three white water splotches in the gastric region had been studied and outlined as probably the teeth. I did not feel justified in exploring, and she went home burdened with disappointment.

Coins are frequently swallowed by children. In many cases the coin passes on and is happily recovered, without recourse to esophagoscopy. But often the coin sticks in the esophagus. Two such cases have come into my hands, and behold my reward—two operations, two fees, total, just twenty-six cents; The first case was a boy of 6, who swallowed the quarter; the coin stuck a few inches below the cricoid where I easily reached it through a short tracheoscope. It slipped from the bite of the forceps just as it came out of the esophagus and I had some trouble in recovering it from behind the soft palate.

The penny was swallowed by a girl between 3 and 4 years of age. I failed in my first effort to recover the coin because I gave up the effort after going down to a point which I thought was well below where the x-ray plate had shown the coin; the child had struggled a good deal and I concluded the coin had been dislodged and carried down. But a second plate showed it still in position, and the second effort was promptly successful. This case demonstrated another of the dangers of esophagoscopy: the child stopped breathing at the instant the coin was drawn from the gullet; artificial respiration was necessary for several minutes before spontaneous respiration was re-established. And this in a robust child!

Fragments of bone are among the most dangerous of foreign bodies; they should be removed at the earliest possible moment. I have had one such case. The patient was an intensely nervous woman from Phoenix; while eating chicken she swallowed a fragment of the wish-bone. I regret that I cannot show you this specimen; it consisted of the central portion of the wish-bone with a short stump on one side; on the other side was a piece about an inch long ending in an extremely sharp point. Fortunately this end was directed downward, which rendered the removal of the body relatively easy and safe. This was done under local anesthesia. The patient recovered promptly. This woman was one of the most grateful patients I have ever had: as I held up the bone for her to see she grasped my hand with hysteric fervor and repeatedly declared her admiring gratitude. This was so intense that she insisted on keeping the bone so that she could have it mounted for me! But alas, for the weakness of human nature! I watched her for several days until all danger was past, and later sent her a modest bill for $50.00. And that's the last I have ever heard from Mrs. H. I didn't even get the bone!

The last case I am reporting, like the first, is not presented because of any sense of personal pride which I feel, but because it has features which are rare if not unique. It is a case of stricture. The patient, a frail girl of about 23, had swallowed a considerable portion of an ounce bottle of pure nitric acid. When first seen by Dr. Clarence Ide, the patient had been fed only by rectum for at least two weeks. She was extremely weak and could swallow nothing. A gastrostomy was imperative, and this was done by Dr. E. C. Moore, after which the patient rapidly gained flesh and strength to a considerable degree. Under Dr. Ide's treatment the horribly injured pharynx, naso-pharynx and fauces slowly healed to a degree where we dared to try to enter the esophagus. At the level of the cricoid the first stricture—or rather the upper end of an almost continuous stricture—was encountered. This admitted a probe about two millimeters in diameter. By means of urethral olivary bougies this was dilated, in several sittings, until it admitted a Lerche esophageal dilator. This admirable instrument materially hastened the dilation at this point, although our efforts to cut and bite away the tough fibrous tissue practically failed. In time I succeeded in passing a 5-millimeter bronchoscope through this upper stricture and down the whole length of the instrument, and later a 7-millimeter bronchoscope. This was not done easily. A very distressing and baffling complication was the condition of the epiglottis; this had been badly damaged and was very rigid; the entrance to the larynx was narrowed, and the folds on either side were so shortened that the epiglottis was drawn back toward the posterior pharyngeal wall in such a manner that when my tube entered the esophagus the concavity of the epiglottis hugged the convexity of the esophagoscope tightly and shut off the patient's breath. Dr. Ide succeeded at times in biting away sufficient scar tissue to temporarily relieve this situation, but usually a recurrence had taken place by the time of the next seance. A further handicap was the girl's condition, miserable at best; one lung was the seat of a slow tubercular lesion. Each sitting had to be followed by an interval of two to six days to allow her to recover strength. All efforts to use silk elastic bougies to maintain the stretching were frustrated by the epiglottis hugging the bougie exactly as it hugged the esophagoscope.

In spite of these difficulties, on two occasions, we succeeded in passing the 7-millimeter bronchoscope down to a point about 10¼ inches from the teeth. Through this whole distance the gullet was strictured to a greater or less degree, the lumen having somewhat the shape of a corkscrew and advance of the instrument being possible only after stretching with the Lerche dilator. At 10¼ inches we encountered a complete occlusion of the esophagus. I estimate from the height of the patient that this point was between four and five inches from the cardia, and I judge that the acid had done its deepest damage at this point because it had been arrested above the cardia by cardio-spasm.

Drs. Ide, Geo. McCoy and I, in consultation, concluded that there was one desperate chance that the complete occlusion might be so short that an instrument passed up from the stomach might act as a sufficient guide for the thrusting of an instrument through the occlusion from above. Dr. Moore consented to attempt the work from the stomach end. Accordingly, the patient was anesthetized, a tracheotomy was done and the bronchoscope was introduced down to the level of the occlusion. At this juncture our work suddenly terminated. As the tube advanced we noticed an area of very marked pulsation on the left anterior aspect of the esophagus and at this point the wall presented a peculiar greyish, translucent appearance. I passed this point, safely as I thought, and came to the face of the occlusion. This time I thought I discovered a slight opening downward; I inserted the dilator and opened it slightly and with very moderate force. Immediately there was a gush of several drachms of fluid; this was odorless and slightly blood-tinged.

Hastily wiping the fluid out of the tube I looked in and was horrified to see an actively pulsating grey body in a cavity—undoubtedly the heart, seen through the ruptured pericardium. Dr. Ide and Dr. McCoy looked and concurred, and we stopped immediately. The foot of the patient's bed was elevated to aid drainage from lungs and esophagus, and we waited for the septic pericarditis to manifest itself. But the temperature remained normal and the patient left the hospital a few weeks later in very fair condition. The latest report was that she was gaining right along.

It is a distinction given to very few men to have looked through the esophagoscope at the pulsating heart. We assure you that it is not a pleasing sight. But if you are inclined to be critical, in the light of the outcome, bear in mind the desperate condition of this woman and the utter futility of the ordinary methods of dilation. Bougies inserted blindly would have failed absolutely, or would have surely perforated the esophageal wall. Any form of guide was out of the question, because the patient could not swallow one single drop of fluid.

I have tried to explain to myself why this patient did not die from septic pericarditis. The most reasonable explanation seems to me that neither the dilator nor the esophagoscope actually penetrated the pericardium, but that the expanding dilator tore an opening in the pericardium through which we looked, and that this opening closed promptly when the instruments were withdrawn. The flow of pericardial fluid from within outward probably helped materially by carrying away the bacteria that must certainly have been carried down from the throat by the instruments.

This patient died after a very few days' illness, four months after this accident. She had been under "Science" treatment during the final months and only an indefinite history of the terminal illness was secured, the chief symptoms being cough and dyspnea. Autopsy showed the pericardium entirely free from acute or chronic inflammation, and the tear could not be definitely located. A double lobar pneumonia was the evident cause of death. The inner surface of the stomach showed an infundibular depression where the cardia should have been. A probe was forced into this for about three-quarters of an inch, where it stopped. Above this point was a solid cord for some inches. The upper portion of the esophagus was so firmly adherent to the vertebrae that it was torn to shreds in removal, and whether any lumen was still present could not be determined.

429 Laughlin Building.

REPORT OF THREE CASES OF OTITIC MENINGITIS TREATED BY DRAINAGE OF THE CISTERNA MAGNA.*

DR. EDWARD BRADFORD DENCH, NEW YORK CITY.

The few remarks which I have to make can hardly be dignified by the title of "a paper." They are simply a report of a personal experience with an operative procedure, proposed just about one year ago, and for which much was hoped. I refer to the drainage of the cisterna magna for the relief of meningitis. The operation is not a new one, as a procedure for draining this region is mentioned by Cunningham (Textbook of Anatomy, 1902, p. 1164). This author not only describes a means of draining the cisterna, but also of opening the fourth ventricle. To Haynes, however, (Transactions of the American Laryngological, Rhinological and Otological Society, 1912), is undoubtedly due the credit of perfecting the technic of this operation, and of bringing it before the profession as a definite procedure for the relief of meningitis.

I simply wish to speak of three cases upon which this operation was performed. It is not necessary to give a detailed history of these cases. I will, therefore, only burden you with a brief resumé of the history in each case:

Case 1: A child, 3½ years of age, had been out of sorts for about a month. A week before I saw the child, there was spontaneous discharge from the left ear. Three days later there was a rise in temperature. For the twenty-four hours immediately preceding my visit, the child had complained of pain in the head and in the left ear, and had cried out at irregular intervals. There was some discharge from the left external auditory canal. An examination of the ear showed a large perforation, involving the entire lower portion of the drum membrane, the mucous membrane of the tympanic cavity being red but not polypoid in character. A bacteriological examination of the discharge showed streptococci; no tubercle bacilli were found in the discharge. There was no tenderness over either mastoid. The right ear was normal. An examination of the child showed slight rigidity of the entire body, but this was not marked. No Babinski sign. Kernig sign present on right side, but not marked. Knee-jerks absent on each side. No nystagmus, slight internal strabismus, probably congenital. The child had vomited several days ago, but there was no vomiting at the time of my visit. The temperature on admission was 101°, rectal; pulse 108. The case looked like one of tubercular meningitis, and was seen by Doctor Holt in consultation. Doctor Holt thought that on account of the slight elevation of temperature and the absence of mastoid tenderness, a tubercular process was the most probable explanation of the condition. He agreed with me, however, that in the presence of meningeal symptoms and a suppurating ear, in connection with the fact that aural suppuration had evidently been of longer duration than was suspected by the parents,—as proved by the extensive amount of destruction in the drum membrane,—an exploration of the mastoid, with free exposure of the dura, would be advisable.

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*Read before the American Otological Society, Washington, D. C., May 6 and 7, 1913.

A complete mastoid operation was immediately done, and all the cells were found infiltrated with fluid. The dura was freely exposed. Over the temporo-sphenoidal lobe and over the left cerebellar lobe the dura was tense. The von Pirquét test was negative. On the day after the operation the temperature fell about a degree, and the rigidity of the body diminished somewhat. On the following day, however, that is, two days after the mastoid operation, the rigidity became more marked, and the temperature rose to 103°. The pulse ranged from 116 to 150, and the respirations were rather high. Owing to the fact that the rigidity had increased, the child was taken to the operating-room, and the cisterna magna drained in the median line, after the Haynes method. The fluid was under considerable pressure. About three or four cubic centimeters of the spinal fluid, mixed with blood, was obtained for pathological examination. This showed no germs, with the exception of one diplococcus. Immediately after the drainage of the cisterna magna, the child seemed to improve somewhat; the rigidity became less and the temperature gradually fell, until, on the third day after operation, it was only 100°. It then, however, began to rise, and the child died seven days after the drainage of the cisterna magna. Some of the spinal fluid evacuated at the time of operation was injected into a guinea pig, and this animal remained perfectly healthy six weeks after inoculation, thus absolutely ruling out the tubercular process, as the cause of the infection.

The case, then, was one of a simple otitic meningitis, following a chronic middle-ear suppuration, and should have been an ideal case for the procedure which we are discussing. That the life of the patient was prolonged by the operation, I believe, but the operation certainly failed to do more than postpone the fatal termination of the disease.

I might say that, in certain decompression operations, where the subdural space has been drained either in the cerebellar or middle cranial fossa, or in both regions, life has been prolonged for a number of days. I am inclined to think, however, in this case, that the time which elapsed between the drainage of the cisterna magna and the fatal termination of the disease, was rather greater than in most of my cases of decompression operations in the middle cranial fossa.

Case 2: Infant, 5 months old, who was operated on by one of my assistants for a subperiosteal abscess. This child was suffering greatly from malnutrition, and was a poor subject for operation. The temperature on admission was 102°; it fell spontaneously the next day to 100°, and then rose to 104°. An ordinary, simple mastoid operation was performed. The temperature the day after rose to 105.5°, then dropped to 102°. Two days after the operation upon the mastoid the child had several convulsive seizures. The child was taken to the operating-room and the cisterna magna opened in the typical manner. The day after this operation the temperature rose to 106.5°, but then slowly came down, so that in the evening of that day, it was only 100°, and the following day had dropped to normal. After remaining normal for about twenty-four hours, it began to rise and fluctuated between 103.5° and 100° until the child died, four days after the cisterna magna was opened. The infection in this case was streptococcus. The spinal fluid obtained by lumbar puncture was negative on cultivation.

In this second case the operation failed to be of the slightest value; in this instance, also, on tapping the cisterna the cerebrospinal fluid was found to be under considerable pressure. Drainage was perfect until the fatal termination.

Case 3: Boy, aged 8, suffering from a chronic suppurative otitis media for which the ordinary radical operation was performed by one of my assistants. A small area of dura was exposed in the middle cranial fossa. A primary skin graft was applied at the time of operation, and the posterior wound closed in the usual way. The temperature was normal at the time of operation, but immediately began to rise, and on the second day after operation, reached 105°. The posterior wound was opened and the graft removed, but the temperature still continued to rise. The blood culture showed one colony of streptococci at the end of twenty-four hours, but this was the only colony which showed at the end of forty-eight hours. In other words, the blood was negative. The differential count showed 83 per cent of polymorphonuclear cells on the second day after operation, and 74.8 per cent on the fourth day after operation. The temperature, however, remained high, and the patient gradually sank into a semi-comatose condition. The neck became rigid, the Kernig sign positive; there was no Babinski. Lumbar puncture showed some pus in the cerebro-spinal fluid, no germs present, and culture of the fluid was negative at the end of twenty-four hours. The carbohydrate content of the fluid was practically normal. Globulins were not present.

Owing to the fact that symptoms of meningitis were present, that the chemical examination of the cerebro-spinal fluid was practically normal, and that the fluid was germ-free, it seemed that the case was particularly suitable for drainage of the cisterna magna. This was performed four days after the radical operation. The fluid was under considerable pressure. The ordinary drain was inserted, and the patient returned to bed. The temperature remained high, but the patient seemed somewhat brighter for the next two days. He died, however, on the fourth day after drainage of the cisterna magna.

These three cases would seem to show that we have not yet discovered a surgical procedure which will enable us to combat successfully that dread disease, otitic meningitis. I do not mean to condemn the operation upon the results obtained in such a small number of cases. The operation is easy of performance, and certainly drains the subdural space as effectually as does any other procedure. It is possible that with more extended experience, this operation may be a step toward the solution of the successful treatment of otitic meningitis.

I have nothing to add regarding the technic of the operation, except to say that the elaborate armamentarium, suggested by Doctor Haynes, in his able article, is entirely unnecessary. I have been able to perform this operation with the ordinary mastoid instruments, and to perform it quickly. I believe that the procedure should be given a thorough trial, but the results obtained from my limited experience have certainly not been encouraging.

15 East Fifty-third Street.

TRAUMATIC ATRESIA OF THE EXTERNAL AUDITORY MEATUS OF THE LEFT EAR WITH MASTOID COMPLICATIONS.*

DR. ERNEST DANZIGER, NEW YORK.

Mr. H. B., 28 years of age, bookkeeper, presented himself at my office on December 14, 1911, with the following history: Seventeen years ago, while playing on a railroad track between two freight trains, one car started to move and his head was caught between the bumpers of the cars.

The left half of his face was lacerated and the left ear completely torn off his head. He was carried to the nearest physician, who sewed the parts back into place. Since the accident he had a paralysis of the facial nerve, the middle and the lower branch just slightly reacting. His hearing on that side was decidedly impaired.

Nine days before I saw him he had suffered from an attack of tonsillitis, accompanied by some pain in the affected ear, which since had somewhat abated and varied in its intensity. He had a temperature of 100°, a slight edema behind and almost above the ear, pain upon pressure over the antrum. He hears conversation voice at about five or six feet; Rinné shows increased bone-conduction. He lateralizes tuning-forks toward the affected side. He has no spontaneous nystagmus, a normal rotation reaction of the vestibular apparatus; the caloric test is negative due to some abnormal conditions, which I will point out now:

Inspection shows the left ear about three-quarters of an inch lower than the right one, looking into the meatus shows it absolutely obstructed by an atresia, which has a very minute opening in the uppermost part of the occluding membrane; the lower part of the atresia seems to be bony. The opening just admits the point of a silver probe. There is no discharge.

Not being able to make a clinical diagnosis, I had recourse to differential blood-counts made twelve hours apart, which promptly threw me off the right track: The first blood-count, December 15, 20,000 W., 72 polys; twelve hours later, 13,00 W., 65 polys; twelve hours later, 10,000 W., 60 polys. I assumed the evidence of an acute infection, which was rapidly subsiding and decided on a waiting course.

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*Read at the meeting of the Otological Section of the New York Academy of Medicine, February 14, 1913.

December 20: The edema behind ear had slightly increased, no discharge through the fistula in the meatus. Dr. Whiting saw the case in consultation and also corroborated with me in my attitude of waiting. He recommended irrigation through a small cannula.

December 22: Patient had a slight discharge from ear, which can be expressed by pressure over the mastoid.

December 27: After receiving permission from the patient to make a post-auricular incision with the understanding that I could do what I deemed necessary, I found the following condition: The usual curved incision was made, and after pushing back the periosteum I found a large defect in the cortex over the antrum. The latter contained a good-sized cholesteatoma, which extended along the upper posterior border of the petrous portion, almost into the posterior fossa, the cholesteatomatous mass also filled the aditus and partly the tympanum. The drum was destroyed and of the ossicles the incus was found and removed. The dura was exposed at the tegmen tympani. At the time of the accident there must have been a fracture of the bony meatus, the floor of which was very much thickened. The membranous meatus did not lead into the tympanum, but almost terminated in front of the maxillary joint. The fistulous opening just communicated with the floor of the bony meatus.

When attempting the plastic, I found the ear so low that the flaps could not be got into the proper position. I chiselled enough of the hypo-tympanum away so as not to enter the maxillary joint and finally succeeded in packing the flaps against denuded bone, but the cavities cannot be overlooked, as the new meatus runs upward and backward in an angle of more than 45 degrees.

He was discharged with a dry ear on April 20, 1912. On April 22, he had a chill, with temperature of 104° and a redness of the retro-auricular scar. At the same time he developed a spontaneous nystagmus when looking toward the affected side. Ruttin has described such nystagmus as occurring in erysipelas. It is due to a collateral edema of the labyrinth. He developed a severe attack of erysipelas, and when I saw him four weeks later, he had a slight mucoid discharge from the ear, which gradually diminished. His hearing is decidedly better than before the operation. He hears whisper for one-half to one foot; conversation, twelve feet; tuning-fork he does not hear by air-conduction but by bone-conduction. except the high forks.

63 West Ninetieth Street.

INJURIES OF THE LABYRINTH.*

DR. JULIUS AUERBACH, NEW YORK CITY.

Recently I have had a number of cases of labyrinthine trauma come under my observation, two of which I would like to report for the interesting features which they present. Both of these cases were produced by indirect violence; in one the lesion involved the static as well as the cochlear portion of the labyrinth, in the other, the cochlea alone was involved, the static labyrinth remaining in function.

Traumas of the labyrinth are not rare and may be classified chiefly into: (1) direct injuries, such as those produced by a bullet or stab-wound, or accidental injury during operation; and (2) indirect injuries which include those cases in which labyrinthine irritation and degeneration is produced by the action of sudden or continued noises, and also those cases due to a force applied to the bones of the cranium. Clinically these cases offer difficulties in diagnosis at the time of the injury, as the symptoms of labyrinthine disturbance are then masked by the more pronounced symptoms of brain injury, be that a fracture or concussion; it is only when the acute symptoms following the injury have subsided that the local labyrinthine symptoms will make themselves evident. Case 1 illustrates this point.

Case 1: G. P., aged 28. Nine months ago, while riding on a bicycle, he collided with an automobile and was rendered unconscious. He was removed to the hospital where he regained consciousness at the end of thirty-six hours. At this time, according to the patient's story, he was said to have been suffering from a fracture at the base of the skull. He remained in the hospital for three weeks, during which time he suffered from headaches and dizziness and noticed that he could not hear on the right side. Previous to the injury, his hearing was perfect, and he had never suffered from any ear trouble. For two weeks after leaving the hospital he suffered continually from dizziness and had to seek support owing to the marked staggering. These symptoms have gradually disappeared, and now his sole complaint is deafness in the right ear for which he seeks relief.

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*Read at the meeting of the Clinical Society of the New York Nose, Throat and Surgical Hospital, March 11, 1913.

Otoscopic Examination:—The drum membranes of both sides are normal in appearance. All the landmarks, including the light reflexes, are present. Both tubes are patent.

Functional Tests:—Left ear: Conversation voice 8 m. +. Whispered speech, 5 m. Acoumeter, 3 m., c^1 and c^4 both heard. Rinné positive. Right ear: Totally deaf to loud voice and noises (tested with the Bárány noise apparatus). Weber, uncertain lateralization. Scarcely any bone-conduction, and then is not certain whether he feels or hears the tuning-fork over the mastoid. Stenger test shows complete unilateral deafness.

Static Labyrinth: No spontaneous nystagmus. No disturbance of equilibrium. Turning ten times to the right = horizontal nystagmus to the left, duration twenty-four seconds. Turning ten times to the left = horizontal nystagmus to the right, duration six seconds. Caloric reaction with cold water left ear, rotatory nystagmus to the right after application of the stream for two and a half minutes. Cold water right ear, same temperature as used in the left and applied for five minutes, no reaction. Pointing test normal.

We have here, then, a case of complete unilateral deafness with complete destruction of the vestibular apparatus, and while nine months have elapsed since the injury, there is no sign of any return of hearing; nor is there any likelihood of there being any return of hearing, because from what we know of the anatomo-pathologic changes which take place in these lesions it is safe to assume that by this time organization with connective-tissue and new bone-formation has taken place.

Less clear and not as well understood are the anatomic changes which take place at the time of injury. The works of Barnick, Lange and Sakai have thrown much light upon the pathological processes that take place in the inner-ear spaces following traumas, as these observers had special opportunities for post-mortem studies on cases of recent injury to the cranium. Before entering into a description of the pathological antomy of labyrinthine traumas I wish to cite the clinical history of another case which came under my observation on the service of Dr. Felix Cohn at the German Hospital.

Case 2: J. B., aged 39, driver of a brewery wagon, and addicted to the free use of alcohol, but with no previous ear trouble of any kind, was pushed and fell to the sidewalk on the back of his head four months ago. He was dazed for a few moments, and on rising to his feet felt dizzy, and staggered and vomited when he reached home. The dizziness and staggering gait lasted for four days and then gradually disappeared. At this time he noticed that he could not hear on the right ear and experienced whistling noises from the same side. Since then he has remained totally deaf on the right side and noises persist.

Otoscopic Examination:—Left ear: External auditory meatus narrowed due to a diffuse external otitis; drum membrane dull; light reflex diminished; pressure in front of the auricle produces pain. Right ear: Drum membrane normal in color; landmarks all present; no undue retraction; both tubes patent. Nasal examination negative. Pharynx congested.

Functional Tests:—Left ear: (Tested with Bárány noise apparatus) Conversation speech 7 m. Whispered speech, 3 m. Acoumeter, 2 m. Weber lateralized to the left. Rinné negative with lengthened bone-conduction; c^1 (sixty-four vibrations) not heard; c^4 positive. Right ear: Totally deaf to loud voice and noises. Rinné is negative infinitive with very much shortened bone-conduction. Watch on the mastoid not heard. c^1 and c^4 not heard. Galton whistle not heard. Stenger test and reading test show complete unilateral deafness.

Static labyrinth: No spontaneous nystagmus. Equilibrium slightly disturbed. Turning ten times to the right = horizontal nystagmus to the left, duration thirty seconds. Turning ten times to the left = horizontal nystagmus to the right, duration twenty-eight seconds. Caloric reaction with hot and cold water, positive.

Here a trauma to the cranium four months ago resulted in complete destruction of the cochlear function of the right side, while the static labyrinth escaped. The two tests which the writer depends upon chiefly in establishing the diagnosis of complete unilateral deafness and also the ones which enable him to rule out the possibilities of simulated deafness or exaggerated deafness are the Stenger test and the reading test with the aid of the Bárány noise apparatus. The former test depends upon the established law that of two tuning-forks of equal number of vibrations, the one held nearer the ear will completely obliterate the sound of the fork held at a greater distance from the ear. As applied clinically, the forks (preferably the small a^1) are struck simultaneously, the patient not knowing that two forks are used. The normal hearing person will hear only the fork which is held closer to the ear. The totally deaf patient will hear the fork from the normal ear although one tuning-fork will be held closer to the deaf ear. The simulator, not knowing that two forks are used, will not hear the tuning-fork from his good ear when one fork is held closer to the side of simulated deafness, at once disclosing that he must hear from the side to which the fork is closely applied.

In the application of the reading test, the patient is given something to read, and asked to read it in his usual tone of voice. With the noise apparatus applied to the ear the patient unconsciously raises his voice to compensate for the noise made by the apparatus in the ear. With the apparatus going in his deaf ear, this makes no impression upon him whatsoever (if really deaf) and the voice is not raised during reading. It is self-evident that the raising of the voice is performed unconsciously on the part of the patient.

Of the further anatomo-pathological changes of the labyrinthine spaces following injury little was definitely known until comparatively recently, as most of the post-mortems were observed in cases where deafness occurred months or years following the injury. In these cases there were invariably found new-formed connective tissue and bone with more or less obliteration of the normal spaces and secondary degeneration of the cochlear and vestibular nerves. Theodore reported a case where the only microscopic change was that of nerve degeneration with no other sign of injury. From the absence of all other microscopic pathological changes, it seems highly probable that he was dealing with a case of nerve deafness.

In Case 1 there can be little doubt that there was a fracture at the base of the skull involving the petrous portion of the right temporal bone with destruction of the labyrinth and resultant deafness. In less severe injuries, as in Case 2, also with resultant deafness. the cause of this destruction of function of hearing is not quite so clear. The writer can also recall three other cases of head injuries resulting in deafness, in two of which the deafness was well-marked but not complete and only temporary, while in the third, a trauma inflicted on the head of an old lady, 73 years of age, who had been partially deaf, caused her to become totally deaf after the injury. It is now two years since the trauma, and the hearing is *nil*.

Numerous theories have been set up to explain the lesions in those cases where a fracture of the labyrinthine capsule was not demonstrable. Lange is of the opinion that in cases of recent concussion of the labyrinth the anatomical changes are the same as in cases of toxic or infectious neuritis of the eighth nerve. Schwartze thinks that in mild cases of concussion, molecular changes take place in the nerve elements or that a passive hyperemia in the labyrinth is produced as a result of a transitory paralysis of the vaso-motor nerves. Politzer thinks that the anatomic changes are those of hemorrhages in the labyrinth in some cases, while in others there is a paralysis of the nerve endings. Gradenigo attributes the deafness following trauma to hemorrhages in the labyrinth and especially into the cochlea. Oppenheim places the lesion in the central nuclei of the eighth nerve.

Barnick has found in his histologic examination of temporal bones after recent injuries, blood extravasations into the maculae acusticae and into the vestibular end-plates. The findings of K. Sakai in five cases of recent bilateral fracture of the temporal bone show that in no single case was the bony labyrinthine capsule involved. There were in eight specimens extravasations of blood out of the oval window and in seven specimens extravasations of blood from the round window; in only one instance was there a tear in the ligamentum annulare. In all the cases there were hemorrhages into the vestibular and cochlear branches of the eighth nerve and in addition there were tears in the nervus cochlearis eight times, in the ramus vestibularis, four times. In the membranous portion of the vestibule, the utricle and saccule and in the semi-circular canals there were hemorrhages in five instances.

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Bronchoscopy and Esophagoscopy. A. E. Bulson, *Jour. Ind. State Med. Assn.*, April, 1913.

After briefly discussing the history of bronchoscopy, Bulson enumerates the various instruments, pointing out their individual advantages and disadvantages. He feels that this operation should only be performed in the hospital; in children under 10 years, cocain should be used (10-20 per cent solution). If general anesthesia is required, the combination of oxygen and chloroform is of value. Bulson details aids to diagnosis and reports two cases which present interesting features. Ed.

EDITORIAL DEPARTMENT

LARYNGEAL, BRONCHIAL AND ESOPHAGEAL ENDOSCOPY.

EDITED BY

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Insufflation anesthesia. Every physician has, in his junk closet, instruments that have been tried and found wanting. Prominent among this junk are various sorts of apparatus for anesthesia. With this in mind, we were very skeptical when we first heard of insufflation anesthesia. After witnessing a demonstration by Elsberg, however, we changed our mind and were open to conviction. Having since used Elsberg insufflation anesthesia for bronchoscopy, esophagoscopy, gastroscopy, thyrotomy and some other operations, we cannot withhold our unqualified commendations. Since the discovery of ether anesthesia, no great advance had been made until the insufflation method was developed. In our personal work, we were somewhat prepared by the use of the insufflation of chloroform, as suggested by Dr. T. Drysdale Buchanan, and for certain purposes that cannot be improved upon in bronchoscopy. For esophagoscopy, however, ether insufflation with the Elsberg apparatus introduces an element of safety which has never pertained to esophagoscopy under general anesthesia before, except in the hands of the most skillful. The number of deaths on the table from arrest of respiration during inexpert esophagoscopy under general anesthesia is appalling. This occurred especially in foreign-body cases where the bulk of the tube and the bulk of the foreign body together compressed the trachea when the esophagoscope overrode the foreign body. We are not prepared to advocate the Elsberg anesthesia, or any other method, to overcome the faults of technic in esophagoscopy; but it certainly insures safety, as far as respiratory arrest is concerned, to have a silk-woven catheter in the trachea insuring the supplying of air to the lungs, and assuring the impossibility of complete obliteration of the tracheal lumen, for enough lumen must exist at both sides of the tube to permit the return-flow of air. We do not hesitate to say that for those who wish to use general anesthesia for esophagoscopy that a death on the table is practically impossible with ether insufflation. Of course, the presence of the catheter in the trachea would render possible trauma by the tube-mouth, but only by the grossest technical faultiness. For gastroscopy, no anesthetic, general or local, is needed to enable the skillful to put the gastroscope into the stomach, but once there, in the absence of the complete relaxation of general anesthesia, the gastroscope remains fixed because of the muscular activity of the diaphragmatic musculature. To gain full relaxation of this musculature and of the abdominal wall, in order that the gastroscope may be freely movable, two things are essential. First, as demonstrated by Henry Janeway, the elevation of the knees of the patient, so that flexion will relax the abdominal wall; and, second, the relaxation of deep general anesthesia. For this second purpose, we can state from actual experience, nothing is equal to the insufflation method with the Elsberg apparatus. Doubtless the other forms of apparatus are equally advantageous, but we speak from personal experience when we mention the Elsberg. Thyrotomy can be readily done under local anesthesia by those who fully understand the technic of infiltration. Much time, however, will be saved by insufflation anesthesia and the strong return-flow keeps the blood and secretions from gaining an entrance to the lower air passages. This return-flow is in every way more advantageous for the purpose than the use of the tampon cannula, or even the excellent plan of Moure using the ordinary cannula with a gauze tampon in place above the cannula. It is surprising how little room the insufflation catheter introduced through the mouth requires in the opened larynx. It lies close along the posterior wall in a region which it is not necessary to invade, because thyrotomy is apt to be unsuccessful in malignancy if the involvement has reached the party wall. Should it be necessary in benign conditions to operate upon this wall it is very easy to displace the catheter sideways. In malignant cases, if it is found that the growth is not removable by thyrotomy and that a laryngectomy is necessary, it is very easy, after amputating the trachea, to insert the insufflation catheter into the cut-end of the trachea and thus carry out a complete laryngectomy with the anesthetist entirely out of the way and with no loss of time. Taking it all in all, Elsberg, Janeway and others who have contributed to the development of insufflation anesthesia have made a very important contribution to the technic of laryngology and doubtless to rhinology as well. An excellent resume of the subject is given in Keen's Surgery, Vol. 6.

Dr. Otto C. Gaub and Dr. W. P. Barndollar, in a recent case, demonstrated the great advantage of the intra-tracheal insufflation method of anesthesia in an extirpation of a naso-pharyngeal fibroma, which was so large that it pressed the soft palate forward on the tongue and produced dangerous dyspnea. If to this had been added the free flow of blood usual in such cases, the patient would have been asphyxiated. On the contrary, in this case from the moment the insufflation was started the patient's color was good. All blood and clots came back out of the mouth and the operation only required a few minutes because it was uninterrupted. The presence of the catheter in the mouth produced no inconvenience whatever. The day of tracheotomy preliminary to the extirpation of naso-pharyngeal fibromata is past.

Cancer of the Esophagus. A. BASSLER, *Jour. A. M. A.*, April 26, 1913, p. 1283.

A new method of radiographic examination of the esophagus for the early diagnosis of cancer is described. The object is to hold the bismuth in the esophagus by plugging its lower end. A bag filled with water is drawn up tightly against the cardiac orifice, and when this has been accomplished, a mixture of bismuth, acacia and water is run into the esophagus and the radiogram taken. The method is described in detail and illustrated. By this method irregularities of the walls of the gullet can be observed and a diagnosis of carcinoma made before stenosis is present. When stenosis is present the method is not practical or necessary for diagnosis.

Clinical Results of Nasal Treatment in Asthma. W. J. ABBOTT, *Cleveland Med. Jour.*, March, 1913, p. 184.

In all of the forty-four cases of bronchial asthma there was some hypertrophy of the mucosa near or over the middle turbinate; in all but two cases reduction of this hypertrophy resulted in improvement. The author also holds that empyemata of some of the nasal sinuses are directly responsible for the asthmatic symptoms and states that in a large percentage of cases ethmoiditis is present in and has a causal relation to bronchial asthma. Therapy and prognosis are discussed and several cases reported to illustrate the satisfactory results of treatment. ED.

SOCIETY PROCEEDINGS.

PHILADELPHIA LARYNGOLOGICAL SOCIETY.

Regular Meeting, December 17, 1912.

DR. ROSS HALL SKILLERN, CHAIRMAN.

DISCUSSION OF DR. O'REILLY'S PAPER. . . .

(*Continued from page 880.*)

DR. GEO. M. COATES: Personally I have had no experience with the Kahler instruments, but admire their looks very much. The use of the extension tubes seems to me to be an excellent device. I have had good results with the Jackson tubes, however, and have not been bothered by the small lamps burning out or overheating. The objection that they soon become covered with blood or mucus does not hold good, because the amount of secretion that would obscure the light would also obscure the vision and would have to be mopped out anyhow. I like the new forceps very much, for the old Jackson handle was very imperfect and frequently acted badly.

DR. A. C. H. ROWAND: Dr. O'Reilly's paper and his able demonstration suggest a wide and valuable field of usefulness. It is apropos to the proceeding paper of Dr. Ridpath's on "Papillomas," as it presents a very ready means of reaching and removing them. In Europe it is more often resorted to than in this country, the facilities for operation being greater abroad than at home. When the technic of the application of the bronchoscope has been more fully mastered and its introduction becomes a routine procedure, it would be like turning the search light into Stygean depths where monsters abound in fancied security preying upon poor suffering humanity at their own dire will and pleasure.

It may not be too fanciful to designate as monsters such pathological conditions as papillomas, malignant neoplasms, abscesses (tuberculous or otherwise) hemorrhages, enlarged bronchial glands (often the inviting cause of much distressing cough, foreign bodies, all more or less jeopardizing the life, health and comfort of mankind.

Dr. O'Reilly demonstrates to us that by means of direct bronchoscopy we can observe these conditions, remove, destroy or ameliorate their destructiveness. The case cited in which a tack was lodged in a bronchus of the right middle lobe surrounded by an abscess, in which by introduction of the "scope" the abscess wall was ruptured, allowing the foreign body to be expelled in a subsequent fit of coughing, demonstrates the utility of the bronchoscope. Gangrene of the lung would, in all probability, have followed the continued retention of the tack.

This afternoon I witnessed the extraction of a papilloma by means of the bronchoscope by Dr. O'Reilly. After many and repeated attempts had been made by other means, the spatula was introduced as far as the vocal cords, bringing into view the growth lodged in the posterior commissure. In an easy and leisurely manner, without much discomfort to the patient, the growth was removed in portions, allowing the chords to approximate. The patient (a young girl) had been troubled with almost complete aphonia, and I feel assured that after the subsidence of the irritation the voice will be restored to normal condition.

Safety pins with their points upwards can be removed through the bronchoscope by means of a clever apparatus (Lerche) which throws a loop over the pin, closing it and then extracting it. This speaks well for the bronchoscope and its extensions, as by no other means could the pin be reached with safety. Hemorrhagic spots can be reached and treated by direct application.

Enlarged bronchial glands can be reduced or removed. Tuberculous foci, malignant growths and other diseased conditions can be brought under direct observation and treatment by means of the "scope" and its extensions. It is evident from the foregoing illustrations that the bronchoscope has come to stay and that many conditions now obscure can be reached and treated with every confidence of successful recovery.

Dr. Fielding O. Lewis: I have listened with a great deal of pleasure to the paper just presented by Dr. O'Reilly, as I have been especially interested in the use of the Kahler instrument during the past year. The syringe shown by Dr. O'Reilly for the cocainization of the larynx seems to be a very ingenious instrument, which I have not used. I have found, however, that the Sajous forceps, as recommended by Jackson, are very satisfactory.

A point in cocainization that I think very essential, is to thoroughly cocainize the pharynx, its lateral walls, and the base of the tongue, after which the speculum is easily introduced and the larynx sprayed, as Dr O'Reilly described.

In connection with this, I should like to mention an interesting case I saw a few days ago. The patient, a pregnant woman whose time was overdue, was brought to the hospital complaining of having a fish-bone lodged in her throat, the chief symptom complained of by the patient was a sharp cutting sensation, felt in the esophagus, on a line with the upper border of the sternum. Under local anesthesia the Kahler esophagu scope was easily introduced and the bone found sticking in the walls of the esophagus, about midway between the entrance of the esophagus and the stomach. The bone was easily extracted by a simple grasping forcep. My experience has been somewhat limited to foreign bodies in the trachea and bronchi, but I have seen a great many foreign bodies in the esophagus. As to non-malignant growths of the upper respiratory tracts, I have found that some cases are easily removed by the direct method, while others are very difficult and in those cases where the reflexes are hard to abolish, the indirect method, after training the larynx, is most satisfactory.

We have now such a case at the hospital, a man who has a fibroma attached to the right side and almost occluding the lumen of the larynx We were unable to abolish his reflexes sufficiently to introduce the biting forcep or snare by the direct method, but after a few days training of the larynx, we have been able to remove most of the growth by the indirect method.

Dr. O'Reilly: In answer to Dr. Lewis, I wish to say that in cases where the reflexes are hard to abolish anesthesia of the pharynx and epiglottis and lateral walls is insufficient. With thorough cocainization of these parts all reflexes should be absolutely abolished for the time being, and the inspection of non-malignant growths or section of malignant growth for pathological examination can be made with ease.

In answer to Dr. Mackenzie, of the preference of the Jackson bronchoscope over the Kahler, I cannot agree with him, as in my experience the field is better illuminated with the Kahler which has its lamp at the proximal end, while the Jackson has it at the distal end, and in my hands the Kahler is very much easier for the operator to handle than the Jackson "scope."

BOOK REVIEWS.

Le l'enrouement chez les chanteurs. Etude physio-pathologique de la voix chante. (Hoarseness in Singers.) By DOCTOR HENRY LAVIELLE, Bordeaux. Pp. 122; A. Destout Aine and Cie, Bordeaux, 1912.

The monograph deals (1) with the physical conditions of the normal singing voice,—its intensity, its pitch, timber and resonance, the various kinds of voices and their classification, the physiological culture of the singing voice; and (2) the treatment of hoarseness,—physical agents of hoarseness, pathological and professional causes, medico-surgical treatment, re-education of the voice, preventive measures, general hygiene. A full bibliography is appended.

Diagnostic et traitement des retrecissements cicatriciels de l'esophage. (Report on Diagnosis and Treatment of Cicatricial Contractions of the Esophagus.) M. GUISEZ, Paris. Presented Oct., 1912, to the Twenty-fifth French Congress of Surgery. Pp. 103, illustrated. Assn. Francaise de Chirurgie, Paris, 1912.

The author calls cicatricial contraction of the esophagus a pathological condition, due to permanent alteration of the tube, characterized by a cicatricial degeneration of the walls with varying progressive symptoms, which tend eventually to complete obliteration of the tube. Next in frequency to cancer of the esophagus, the author regards cicatricial stenosis, and in his book discusses it from various points of view: (1) Diagnostic (clinical and physical symptoms). Esophagoscopy. (2) Therapeutic: Dilatable and non-dilatable cases. Various methods of dilatation: Surgical procedures,—Gastrostomy, external esophagotomy, esophago-gastrotomy.

Le nerf larynge superieur et sa nevrotomie. (Superior Laryngeal Nerve.) Drs. Georges Liebault and Rene Celles, Bordeaux. Pp. 35, with 7 illustrations in the text. Feret et Fils, Ed., Bordeaux, 1913.

The first chapters treat of the anatomy of the L. S., from its origin to its point of entrance into the larynx. The following chapters consider the author's operative technic of exposing the nerve which they divide into the two steps of locating and exposing the external carotid, and locating and exposing the superior laryngeal nerve, its denudation and resection.

The monograph has six clearly executed plates illustrating anatomy and operative procedures.

Les stenoses inflammatoires chroniques de la region cardiaque de l'esophage. (Chronic Inflammatory Stenoses of the Cardiac Region of the Esophagus.) DR. GEORGES LIEBAULT, Bordeaux. Pp. 132, illustrated, Imprimeries Gounouilhou, Bordeaux, 1913.

In the first section of this book the author considers the anatomy of the inferior portion of the esophagus with particular emphasis on the clinical view.

In the second part chronic inflammatory stenosis forms the subject with emphasis on its pathogenesis, as suggested by the anatomy of the cardiac region. Therapeutic measures applicable to the affection are considered at length. Detailed reports of twenty-seven cases follow, some of which have been elsewhere described in medical literature.

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ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to The Laryngoscope.)

USE OF NORMAL HORSE-SERUM AS A MEANS OF CONTROLLING HEMORRHAGE IN OTO-LARYNGOLOGY.*

DR. MAX A. GOLDSTEIN, SAINT LOUIS.

The development of radical and more extensive surgery of the nose and throat in the past decade, the frequency with which the surgery of this area is undertaken even by insufficiently experienced operators, the liberal vascular distribution in the mucous membranes supplying the tissues of these fields of operation, and the peculiar, soft and elastic anatomical structures involved in this special surgery have made the question of hemorrhage and its most effective control a consideration of extreme importance.

This is especially true in the extensive surgery of the nasal septum where most liberal resections of bone and cartilage are frequently undertaken; in the complete evisceration of the ethmoid labyrinth where the ramifications of cells are frequently followed instrumentally into the sphenoid areas and close to the orbit; in the thorough and intense curettage of the pharyngeal vault and lateral walls for the removal of adenoid tissue; and finally in the formidable, complete enucleation of the faucial tonsil which has supplanted the older tonsillotomy.

In accepting this more classical form of surgery in our practical work as the practice of to-day we have also assumed a greater responsibility with our patients; for we have exposed wider fields to infection, necessitated greater areas of repair and reconstruction and offered more opportunities for hemorrhage.

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*Read at the nineteenth annual meeting of the American Laryngological, Rhinological and Otological Society, Washington, D. C., May 9, 1913.

Technically the general surgeon has a comparatively easy task in the control of hemorrhage when the bleeding vessel can be readily located and ligated; the nose and throat surgeon encounters many handicaps in the control of hemorrhage because it is difficult to locate the bleeding vessel as in the deeper curettement of the ethmoid cells or sphenoid cavity where strips of gauze are packed more or less blindly into the bleeding cavity; it is at times inaccessible, as we have all experienced, in the mechanical control of hemorrhage in the vault of the pharynx following adenectomy where the complete tamponade of the post-nasal spaces and the anterior nares is at best a somewhat clumsy procedure; in the radical tonsillectomy where the bleeding is frequently from many smaller capillaries in the wounded faucial pillars rather than from an important vessel, and where chemical styptics, specially prepared tampons, mechanical tonsils hemostats, or even ligature of the faucial pillars must be undertaken.

Experience teaches us that many of these troublesome and nerve-racking hemorrhages may frequently be avoided by a more careful preliminary preparation of the patient. Simple adenoid curettement was formerly undertaken in our numerous clinics and even in private practice as an uneventful routine work. Patients were operated summer or winter, with or without anesthesia (local or general) and sent home shortly afterwards in dust, wind and weather. Tonsillotomy was performed as lightly as the spraying of the mucous membranes or syringing of the ear, and the patient was permitted to walk home or ride in a crowded street car without any thought of serious consequences. This was so frequently followed by earache, suppurative otitis, infections of the tonsillar regions, hemorrhage and other complications of a similar character that a reaction in the interest of the patient was found imperative.

To-day a greater discretion is exercised in the conduct of these operations, and adenectomy and tonsillectomy are justly regarded as surgical hospital cases. The patient is given preliminary attention similar to other surgical cases, is kept quiet, in bed, after the operation, and the surgical field carefully inspected from time to time.

Where the surgeon obtains previous knowledge of the hemorrhagic or hemophilic diathesis in a case to be operated, constitutional measures are also undertaken to guard against any possibility of serious bleeding following operation. The time-honored therapy of administering calcium salts for a definite period preceding the operation has been given much attention. In the experience of the writer, it has, with few exceptions, proved of no practical value.

Gelatin-feeding is another classic therapy which, when persistently administered for many weeks, may be of some value in the conduct of a case of definite aneurysm, but can hardly be a matter of importance for the control of hemorrhage in nose and throat surgery.

The advent of serology and the study of the chemical and biological changes in the blood has opened another avenue of research which may be destined as an invaluable agent in the preparation of patients before operation and where hemorrhage is a possibility and where its physiological control may be more definitely exhibited.

As early as 1897, Bienwald reported the successful control of hemorrhage in a hemophilic patient following the injection of blood-serum. After a lapse of over five years Welsh re-awakened the interest of the profession in this valuable therapy by the unusual results which he obtained in the treatment of hemorrhage in the new-born. The literature of the past two years contains numerous contributions on the use of the sera of a large number of animals exhibited to control hemorrhage of varying degrees in many localities. There has been such a complicity of suggestions on the use of sera and such a melange of conclusions that it is now rather difficult to evolve a simple procedure and establish fixed principles in the employment of this therapy.

It has been definitely recognized that the coagulation-principle of the blood is dependent on the action of thrombin, the so-called fibrin ferment, on fibrinogen, one of the normal elements of the blood, in the presence of calcium. This has led to the theory that delayed coagulability or absence of coagulability might be due to the lack of sufficient calcium salt in the blood, and prompted the method of feeding calcium salts to the patient in whom hemorrhage was feared or in whom hemorrhage had ensued. This theory has been abandoned, and the exhibition of calcium salts is no longer the essential factor that it was ten years ago.

The study of thrombin and anti-thrombin, bodies and anti-bodies, and the fibrino-plastic elements of the blood have superceded the older theories in the question of hemorrhage and its possible constitutional control.

There are many local and constitutional causes of hemorrhage, but those that concern us especially within the limitations of this paper are hemorrhage due to diminished or delayed blood-coagulation, increase of blood-pressure, and the various hemorrhagic and hemophilic diatheses; for it is assumed that the usual operations on the nose and throat are not undertaken in the presence of febrile, infectious, and pathological constitutional conditions.

With the resources of many valuable monographs, such as those of Solis-Cohen, Lescohier, White, Clowes and Busch, Rudolf, Duke, Hunter, Packard and others at hand, I have attempted to formulate a systematic plan of observation, technic and therapy, the results of which justify my presentaion of this subject in a somewhat empirical form.

My conclusions are based on a series of fifty cases which have been selected at random from private and clinic practice, irrespective of age or sex, or of the character of operation performed.

The accompanying record-card facilitates the collection of systematic data.

Name .... Date ....
Address .... Age .... Sex ....
Diagnosis ....
Anesthetic ....
Operation ....

		Date		Date		Date
Blood Pressure:						
Systolic	.... m.m.	....	.... m.m.	....	.... m.m.	....
Diastolic	.... m.m.	....	.... m.m.	....	.... m.m.	....
Hemoglobin	.... %	....	.... %	....	.... %	....
Coagulation Time	.... min.	....	.... min.	....	.... min.	....
Urine:						
Albumin	....	....	....	....	....	....
Sugar	....	....	....	....	....	....

HISTORY:

Hemophilia.
Chlorosis, pernicious anemia, leukemia, purpura, scurvy, malaria.
Acute infections: typhoid, pneumonia, rheumatism, diphtheria.
Exanthemata.
Tuberculosis.
Lues.
Nephritis, arterio-sclerosis, diabetes, jaundice, gout, cancer.
Menstrual irregularities.
Previous serum or vaccine injections.
Other diseases and further data.

The following details were carried out in each case:

Within twenty-four hours previous to the time of operation, (1) a physical examination of the patient was made; (2) the systolic and diastolic blood-pressure test was recorded; (3) the hemoglobin per cent noted; (4) the coagulation time ascertained of blood obtained from the lobe of the ear; (5) where the time-limit of the coagulation exceeded seven minutes a hyperdermic injection of 10 ccm. of normal, sterile horse-serum was given; (6) in each case where the serum injection was made the coagulability of the blood was again tested just prior to the time of operation.

The physical examination of the patient included a careful inquiry into a possible hemophilic diathesis, hemato-pathology, previous exanthemata, typhoid fever or diphtheria, menstrual irregularities, and the previous employment of sera or vaccine injections.

In the determination of the systolic and diastolic blood-pressure the Tycos sphygmomanometer was employed. The hemoglobin test was the simple method of Tallquist. Where an abnormal blood-count or hema-pathology was suspected a microscopic examination of the blood was undertaken at the same time. The method employed for measuring the coagulation-time of the blood was a modification of the simple method suggested by Duke. This apparatus was selected because of its simplicity, transportability, and fair accuracy. The description of my modification of Duke's equipment and the details of its use are furnished by Dr. T. O. Edgar, whose assistance in these observations I acknowledge with thanks:

"The time of coagulation in this test is based on the observation that a drop of blood on a glass slide will, when a certain stage in the process of coagulation is reached, maintain the same contour regardless of the obliquity of the slide upon which it is resting. The appartus used is that devised by Duke and consists of a thick glass slide (Figures 1 and 2) on which is mounted two glass disks 5 mm. in diameter and about 1 mm. in height. The blood may be obtained after the usual technic from the finger or from the lobe of the ear. The latter procedure has been used in this work. If, after the site of puncture is cleansed carefully with soap and water and dried with alcohol, a thin film of vaseline is applied to the surface of the skin, the influence of contact of the blood with the skin will be lessened and the accuracy to that extent increased.

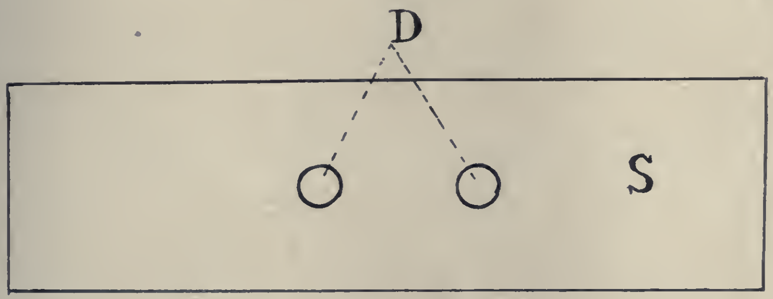

Figure 1. D. Glass disks. S. Glass slide.

"In order to maintain as uniform a temperature as practical, the glass slide is placed in an inverted Petri dish and the latter floated in any large dish of glass or metal. An ordinary wash-basin will answer the purpose. An ordinary chemical thermometer is placed in the bottom of the basin for temperature observations. To prevent the thermometer from rolling, an ordinary pinch-cock or any other simple device way be utilized. The temperature of the water is maintained at 38°C. or 39°C. by adding, from time to time, a little hot water from a pitcher kept within convenient reach. When all is ready, the slide and both sections of the Petri dish are placed for a few minutes in the water at 38° C. so as to impart to them the desired temperature. The slide is quickly dried, the ear punctured with a sharp lance and a drop of blood, when sufficiently large, allowed to touch the top of one of the disks. The remaining blood is immediately wiped from the ear and a second drop, obtained in the same manner, placed on the other disk. These two disks should have been numbered '1' and '2' by marking with glass-marking pencil or otherwise. Each drop of blood when mounted should be about 2 mm. in height, and if varying much from this height, should be replaced without delay by a fresh drop. The flow of blood should be free so as to obviate the necessity of any squeezing of the ear. Having noted the time of obtaining each drop of blood, the slide is at once placed in the Petri dish and floated as in Figure 3. At the end of five minutes and each minute thereafter, the Petri dish containing the slide is taken out of the water and held slantingly to observe the effect on the contour of the drop. Before coagulation has occurred a drop of blood will, when placed in this manner, lose the perfectly convex contour it has when horizontal (Figure 3), and assume a shape as shown in Figure 2. As soon as one of the drops maintains its contour regardless of the obliquity of the slide, the time is noted. If both drops are approximately of the same height the average elapsed time required by each drop may be taken as the time of coagulation. As an additional aid to show the approach of the desired

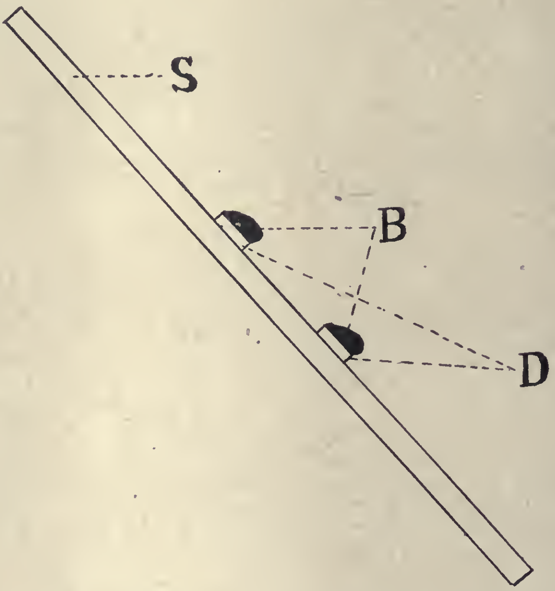

Figure 2. D. Glass disk. B. Drop of blood. S. Glass slide.

point, one will observe, when the drop is viewed by transmitted light, that a small opaque mass of fibrin appears and the latter always seeks the lower edge of the drop when the slide is tipped to one side; but when the point of coagulation is reached this mass remains near the center and its location in the drop is not affected by tipping the slide."

In the consideration of the appended table of the records of the fifty cases tested in this manner a number of definite conclusions may be drawn:

There is a definite and consistently constant reduction of the coagulation-time of the blood observed in this first series of fifty cases, irrespective of age, constitutional dyscrasia, blood-pressure or hemoglobin per cent, after the injection of normal horse serum. This reduction varies from one-half minute to three minutes by tests in which the blood-drop is maintained as nearly as practically possible in its usual physiological associations—namely, at uniform body temperature and free from air, dust or other extraneous influence. It must be emphasized that this quite accurately-timed coagulation period is considerably decreased when the blood is allowed to coagulate under ordinary conditions. So, for example, the remaining blood-drop on the lobe of the ear, exposed to the air, thermal and chemical changes and static influences, coagulates long before the blood-drop that is being observed in the apparatus here described.

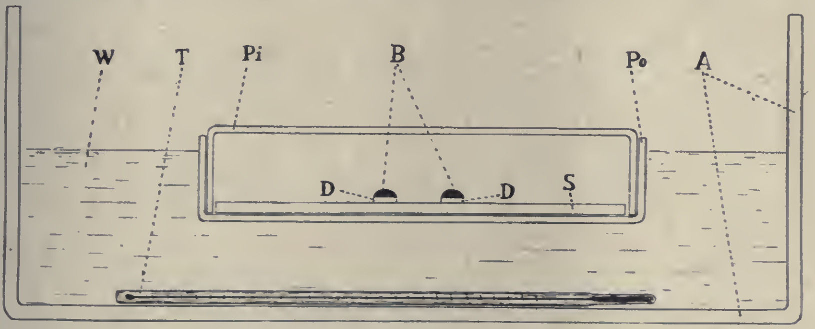

Figure 3. A. Large basin or glass dish containing water. W. Water. T. Thermometer. Po. Petri dish (outer portion). Pi. Petri dish (inner portion). S. Glass slide. D. Glass disk. B. Drop of blood.

Five of this series of cases were operated under general anesthesia; forty of this series of cases were operated under local anesthesia; five of this series of cases were operated without any anesthesia. I operate under local anesthesia wherever possible, both in adults and children; use no adrenalin; no infiltration anesthesia, simply carefully pencilling or swabbing with 5 to 10 per cent cocain, freshly prepared for each case. The five cases operated

No.	Name	Sex	Age—Years	Blood Pressure (in millimeters)		Hemaglobin Per cent	Coagulation Time (in minutes)		Diagnosis
				Systolic	Diastolic		Before Injection	After Injection	
1.	A.L.	M.	45	100	......	95	6½	....	Sup. O. M. Chr.
2.	K.V.	F.	8	......	......	85	9	7	Hyp. Tons.
3.	R.K.	M.	20	110	......	100	6½	....	Hyp. Tons.
4.	A.B.	M.	6	100	......	95	10	7	Hyp. Tons. & Ad.
5.	G.V.	M.	30	120	......	98	11	8	Peritons. Abscess.
6.	D.S.	F.	25	110	......	100	8½	6½	Defl. Sept.
7.	D.C.	F.	35	125	......	85	11	8½	Hyp. Tons.
8.	A.B.	F.	20	125	......	80	10	8	Hyp. Tons.
9.	L.B.	F.	22	120	......	90	6½	....	Hyp. Tons.
10.	H.H.	M.	8	120	......	90	10	7½	Hyp. Tons.
11.	H.C.	M.	35	125	......	95	6½	....	Defl. Sept.
12.	D.H.	M.	45	125	......	95	7	6½	Chr. Ethmoiditis
‡13.	A.S.	M.	30	120	......	70	12	11) 10) 9)	Defl. Sept.; Hemophilic
14.	T.M.	F.	25	125	......	93	7	....	Hyp. Turb.
15.	N.P.	F.	10	125	......	95	8½	7	Hyp. Tons.
16.	N.W.	M.	12	115	......	95	8	6½	Hyp. Tons.
17.	J.D.	M.	5	100	......	95	5½	....	Adenoids
18.	L.M.	M.	7	110	......	90	6½	....	Adenoids
19.	S.W.	F.	8	120	......	90	7	....	Hyp. Tons. & Ad.
20.	M.L.	F.	16	125	......	95	8	6½	Hyp. Turb.
†21.	S.F.	F.	10	125	......	90	9½	8½	Hyp. Tons. & Ad.
22.	C.S.	F.	32	130	......	100	7	....	Hyp. Tons.
23.	J.F.	F.	28	135	......	100	10	8½	Hyp. Tons.
24.	R.D.	M.	5	110	......	90	7	....	Ad. & Hyp. Tons.
*25.	D.G.	M.	12	110	......	75	11	10) 9)	Adenoids, Hemophilic
26.	S.J.	M.	13	120	......	95	7	....	Hyp. Tons.
27.	L.S.	F.	27	125	......	90	9	7½	Hyp. Tons.
28.	H.W.	M.	24	125	......	95	8½	7	Def. Sept.
29.	F.D.	M.	52	......	......	......	7½	6½	Hyp. Tons.
30.	H.C.	M.	50	......	......	......	7½	6	Defl. Sept.
31.	E.D.	M.	38	......	......	......	7½	7	Lues, 10 years ago.
32.	P.G.	F.	19	......	......	......	6	....	Hyp. Tons.
33.	V.C.	F.	24	110	......	90	7	6	Hyp. Tons.
34.	P.H.	M.	7	120	......	95	7½	6½	Hyp. Tons.
35.	M.P.	F.	8	120	......	95	6½	....	Hyp. Tons. & Ad.
36.	T.S.	F.	8	130	......	90	8	5½	Hyp. Tons. & Ad.
37.	D.B.	M.	3	......	......	85	7½	....	Ad. & Tons.; Lymph. Diath.
38.	M.B.	F.	4½	......	......	90	7	....	No Anesthesia
39.	A.R.	M.	3	......	......	90	7½	6½	Her. Syph.
40.	R.J.	M.	11	......	......	95	6	....	Hyp. Tons. & Ad.
41.	S.F.	F.	10	125	......	90	8	7½	Ad. & Tons. (Same as 21).
42.	A.P.	F.	28	125	......	90	8½	7	
43.	P.W.	F.	4	......	......	90	8	7	Lymph. Diath.
44.	R.W.	F.	3	......	......	90	7½	7	Lymph. Diath.
45.	H.L.	F.	6	......	......	95	7	....	
*46.	A.B.	M.	5	......	......	90	7	6	
47.	H.W.	F.	4	......	......	......	6½	6	Her. Syph.
48.	R.C.	M.	45	......	......	......	9½	6½	Def. Sept.; Diph. 2 yrs ago.
49.	S.R.	F.	11	......	......	......	8	6½	Diph., 1 year ago.
50.	N.B.	M.	15	......	......	......	8½	6	Diph., 9 months ago.

*Microscopic blood examination made in this case.

†Lymphatic diathesis; mental defective; operation deferred; see Case 41.

‡Microscopic blood examination made in this case. Since this table has been compiled six additional injections of sterile horse-serum have been administered in this case, the recurrent bleeding has ceased, and no anaphylaxis has occurred

without any anesthesia were of the lymphoid diathesis or status lymphaticus, a condition in which, in my opinion, anesthesia is absolutely contraindicated.

The greatest reduction in coagulation time (2½ to 3 minutes) was noticed in three cases, all of which had contracted diphtheria within two years of the time of testing, and all of which had been injected with diphtheria anti-toxin during the diphtheritic attack. This may be significant of some potent change in the blood, continued for some time and still influencing the coagulation period.

In one case where lues was acquired ten years ago, and two cases of hereditary lues, the coagulation-time was very short, by comparison, before and after using the serum (one-half minute in each case). Possibly this also demonstrates a reduced fibrino-plastic influence because of the associated lues.

In the lymphoid types, also, the short coagulation time was very marked. In four of the cases in which the serum was used, the reduced coagulation-time did not exceed one minute.

In no case has there been active bleeding of any kind after the patient left the operating-table. There has been no secondary hemorrhage. In the tonsillectomies, not even the formerly frequently observed surface oozing has been noticed; in the septal resections the dressings (I pack both nares for 24 hours) were markedly less sanguinous and I have found less occasion to repack for troublesome oozing or slow bleeding which I often formerly had when removing the first dressings.

Most of these cases are taken from private practice and I have had ample occasion to watch them carefully.

There is no doubt of the efficacy of fresh, normal, sterile horse-serum as a direct agent to reduce the coagulation-time of the blood, as is evidenced in such a large percentage of this series of cases. Packard, in commenting on the stability of serum-injection for the control of hemorrhage in a hemophilic boy on whom he had performed a bilateral tonsillectomy, records the injection of several doses of plain horse-serum without effect, and demonstrates the improvement of this patient after an injection of freshly-drawn rabbit's serum.

Such results may depend on the age of the serum, for there is undoubtedly deterioration in potency after a certain period. The selection of an efficient serum is as important in this therapy as is the selection of a fresh antitoxin in diphtheria.

The serum that I have used in these investigations has been kindly prepared for me by the research laboratories of the Parke Davis

Company and of the H. K. Mulford Company, in 10 ccm. containers, syringe-form, equipped with sterile hypodermic needles, ready for use. Serum for this purpose should bear the date of preparation, and should not be more than three months old, for it is likely that changes in the anti-bodies may be exhibited in old serum similar to those which have been described in antitoxins.

There is another source of faulty therapy in the use of sera for the control of hemorrhage. Several observers have reported their experience with sera in individual cases of hemorrhage and have expressed doubt as to the efficacy of such sera. It must be emphasized, however, that in these cases the serum was used *after* the hemorrhage had ensued and not prior to the operation or time of hemorrhage. The effect of heterogenous sera as an agent to control hemorrhage is not always demonstrable within a few hours after injection but requires a longer period of time (twelve to twenty-four hours) for the modification of the fibrino-plastic elements which it influences. Such sera, therefore, must by preference be used as a preventative therapy and injected from twelve to twenty-four hours prior to the operation and not as an emergency measure or "court of last resort" when all other resources have failed.

Anaphylaxis is a complication which I have always had in mind, for in several instances of hemophilia I gave three successive jections in one case and four in another. These injections were from twelve to twenty-fours hours apart and were continued until a reduction in the coagulation-time of the blood was definitely observed. All of these injections were made prior to the time of operation. No symptoms of anaphylaxis have been observed.

In two cases (one a child of 6 and the other an adult of 24) a latent rash or urticaria was noted. In the child it was a diffuse rash first appearing six days after the injection of the serum and lasting for about thirty-six hours; in the adult a roseolar rash was found about the neck and shoulder on the second day following the injection, of about twenty-four hours' duration.

While these investigations have not yet been extensively enough conducted to permit of any hard and fast lines being drawn for the employment of serum as an independently effective agent for the control of hemorrhage in all cases of surgery of the nose and throat, yet I feel justified in the claim that when used systematically as a prophylactic or preventative measure as herein set forth, and in conjunction with a simple and fairly accurate method of noting the coagulation-time of the blood, together with the determination of the blood-pressure, we have a most potent and valuable ally in the control of hemorrhage.

Clinically I can offer only my own experience in disposing of the question of hemorrhage before and since my use of sera. Formerly, whether I used the guillotine in any of its modifications, tonsil-knife and tenaculum-forceps, scissors, or the various forms of snares in a tonsil enucleation. I was never certain when or where I might be called back to the patient to combat a troublesome hemorrhage. To-day I use the serum-therapy as above outlined as a routine procedure and systematically test the coagulation-time in each case and whenever the coagulation-time exceeds seven (7) minutes, the serum is injected. When I have taken this precaution, avoided the use of adrenalin and the active mechanical disturbance of tissues by infiltration anesthesia, completed the tonsil enucleation with the Pierce-Mueller snare, dissector and volsellum forceps, I feel that my patient can be safely left without fear of hemorrhage.

3858 Westminster Place.

Treatment of Vincent's Angina. J. Citron, *Berl. klin. Wchnschr.*, April 7, 1913.

A trituration of salvarsan in glycerin (0.1 to 5 ccm.) was applied locally for three days in two of Citron's cases with a resulting permanent cure of the lesions at the end of five days. Ed.

Angioma of Larynx, Especially its Relation to Chronic Laryngitis, with a Report of a Case in a Child Nine Months Old, Following Measles. Review of Literature. John Phillips, *Am. Jour. Dis. of Child*, Feb., 1913.

The case reported was a child, 9 months old, who, following measles, developed hoarseness, difficulty in breathing, and a croupy cough. The symptoms gradually increased, pneumonia developed and the child died. On examining the larynx, post-mortem, there was only a slit between the cords, the space being filled up with an irregular growth, reddish-gray in color, which extended down into the larynx. The microscopic examination showed it to consist principally of a mass of thin-walled vessels filled with blood.

Halsted.

HISS LEUCOCYTE EXTRACT IN COMPLICATIONS OF NASAL AND AURAL SURGERY.*

DR. W. H. HASKIN, NEW YORK CITY.

In 1910, my associate, Dr. J. G. Dwyer, published a most valuable paper on the use of vaccines, serums and the Hiss leucocyte extract, and it is with the further use of this extract that this paper will deal. In the death of Prof. Hiss the profession has lost one of its most brilliant, enthusiastic and scientific members. His first report on this extract was published in the *Journal of Medical Research,* in November, 1908, and gave in detail the results of his experiments and the exact method for the preparation of the extract. His work had extended over a period of two years, so that even in his first paper he only offered a thing that had actually been tested and had given results.

It has been asked a thousand times, "Why hasn't he published his further work?" The only answer is that he was almost totally deaf and suffered with the extreme diffidence that these unfortunates so often have, and also, it is probable, that he knew that he was a doomed man for nearly four years, dying as he did from multiple melanotic sarcoma, which had destroyed one eye about a year and a half before his death. He has left a monument with us which is sure to prove one of our greatest mainstays. It may be that his extract as prepared to-day will not continue in use, but there is no question but that the principles upon which he worked and formed his theories are absolutely logical and that any further investigations along this line will be the direct result of his legacy, and therefore credit should be given him for his discovery. After his assistant, Dr. Hans Zinnser, went to California in 1909, Prof. Hiss became still more diffident and retired almost entirely into the seclusion of his laboratory. He told me several months before his death, that had not Dr. Dwyer come into his life, any further work with the extract would probably have stopped in 1910. A very strong friendship arose between them in 1910 and for the first time Prof. Hiss had a man follow up the clinical use of his preparation in whom he had entire confidence so that the many trials in actual practice have been due to Dr. Dwyer's enthusiasm and devotion to Prof. Hiss who never would go out to see a case himself but always sent his new-found friend. As Dr. Dwyer has been with me both in my office and hospital work ever since he entered practice, it is very natural that I, too, have become an ardent believer in the efficacy of this product, and have asked to read this paper only after being told that it could not be presented by Dr. Dwyer to whom so much of the credit is due for the brilliant results that have been procured.

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*Read at the nineteenth annual meeting of the American Laryngological, Rhinological and Otological Society, Washington, D. C., May 8, 1913.

It is necessary to read Prof. Hiss' theoretical considerations which led to his experimental work upon leucocyte extracts and infections, in order to fully understand the rationality of his work. He says that: "In thinking over this work I came to the conclusion that in many diseases we are probably dealing with an immunity a large part of whose mechanism is individually cellular, not only in the sense of phagocytosis and digestion, but in the neutralization of poisons given rise to by the disintegration of the bacteria—a mechanism in which the protecting cells must intervene and unaided by bodies in the plasma neutralize within themselves the poisonous products of the invading micro-organisms. It was this thought that gave rise to the further idea of aiding the leucocytes by furnishing them as directly as possible with the weapons which were being taken away from them in their fight with invading micro-organisms and to thus protect them from destruction and give them an opportunity to recuperate and carry on successfully their struggle against the invading germs. These weapons, whatever might be their nature, I assumed might possibly be furnished by an extract of the active substances of the leucocytes themselves (substances not ordinarily given up to the plasma or serum) and I also assumed that extracts would be more efficacious than living leucocytes themselves, introduced into the infected animal, since being diffusible they would probably be distributed impartially to all parts of the body by the circulatory mechanism and, as quickly as absorption would permit, relieve the fatigued leucocytes and protect, by any toxin-neutralizing or other power they might possess, the cells of highly specialized functions.

This idea of immunity differs from one that simply assumes the cells as the source of all immune bodies (which logically seems to be the case) in that it takes into consideration the presence and production in the leucocytes of agents which are not normally given up to the plasma, but which are constantly able to reproduce themselves and carry on the functions of digestion or neutralization simply for the benefit and protection of the individual cell, while not being secreted or excreted by the cells for the more general benefit of the cell community at large.

"Thus we have a differentiation of immune agents into those which by virtue of their liberation and over-production by the cells, such as the anti-toxins, amboceptors, and agglutinins, etc., are free in the plasma and thus, when active, are immediately available for the protection of all the body cells; and into those agents by which certain cells primarily nourish and protect themselves, and are only of benefit to the cell community at large by virtue of the direct intervention of these cells between the invading germs and their products and the highly specialized cells requiring protection. It seems, then, that when these sources of protection are overtaxed or fail to act efficiently, on account of some inherent weakness or untoward circumstance of location, that the most reasonable course is, if possible, to support the chief army of attack as indicated by a study of the exudates and pathological changes in the disease in man and animals, and to endeavor to supply those products which are most heavily taxed in the fight, in other words, to introduce into the infected animal or man the substances composing the chief cells or all the cells of an exudate in the most available form and as little changed by manipulation as possible. Such substances, if they become free from the cells by extraction, might serve to neutralize poisons in the blood, might alone or in combination with bodies already in the blood act deleteriously on the bacteria, and thus protect and augment the activities of the flagging leucocytes by supplying them with their own weapons in the fight against the invading organisms. And further, the extracts of such exudates from previously immunized animals might even better serve this purpose, since their cells probably have, in their own fight against the same organisms gained increased powers, as is evidenced by the ability of such immunized animals to safely dispose of immense numbers of organisms without serious harm or loss of weight. Also, as a further adjuvant, immune sera might be found serviceable in some cases, especially early in the disease and when non-immune cells are being used, although it is our belief that sufficient immune bodies (bactericidal or bacteriolytic) are often present, and in sufficient amount even early in the disease, if the animal economy has not been entirely overwhelmed by an enormous primary dose of the infecting organisms or their poisons."

His paper gives the results of the curative influence of the extract in animals with staphylococcus, streptococcus, pneumococcus, meningococcus and typhoid bacillus; it also reports the result of its use in twenty-four cases of meningitis in man, and its use in acute lobar pneumonia in man.

His original results have been so fully borne out since then in over 400 cases of various infections, most of them desperate ones, that it seems as though the time for doubt has gone and that we should all learn when and how to use it to the best advantage of the patient and not turn to it only as a last resort. Even a month ago two of our most prominent otologists asked me to tell them about this vaccine. It is not a vacine or antitoxin in any sense of the words and should not be confused with them as is constantly done. My own experience with three desperate cases, all being in the hospital at the time, gives most marked evidence of its value:

Case 1: On February 18, 1913, Sol. Z., aged 1 year, was brought to my office, being referred by Dr. H. S. David. The child had been very ill for over five weeks running temperatures up to 105°, and with both ears discharging very profusely. The physician in charge had opened the drums several times, but failed to realize the gravity of the case and Dr. David, being a friend only, advised the parents to see me. Examination showed undoubted involvement of both mastoids, with extreme contraction of both pupils and a very suspicious, rigid contraction of the muscles of the neck. He was sent to the Manhattan Hospital at once and operated upon within two hours. Both processes were completely disintegrated and the sinus on the left side appeared to be almost necrotic for about half an inch. An attempt was made to draw off some spinal fluid but the syringe filled with blood, or at least a dark fluid which coagulated very rapidly. At the time this gave us some uneasiness, but Dr. Ende, of the Central Islip Hospital for the Insane, assured Dr. Dwyer that this was not an infrequent occurrence in his work at the hospital, and I have seen another such case since then. Blood was drawn during the operation for culture and proved to be negative. All possible speed was used, in order to lessen the shock as much as possible, and the patient was taken off the table at the end of thirty-five minutes. That night the temperature rose to 106° and the leucocyte extract was given and continued daily for seven days.

The temperature became lower. but remained around 102° for several days. A pediatrist was called in on the seventh day to determine whether there might not be some general systemic condition that was keeping up the temperature, but he found nothing. The child improved slowly but on the twenty-fifth day a large trophic slough was discovered over the torcula and a day later another smaller one appeared near it on the left side. Up to this time both mastoid wounds had been doing very well, but then healing seemed to stop and the granulations became very flabby and unhealthy. The extract was again administered for three days with remarkable effect, both the wounds and the sloughs assuming a healthy appearance and going on from that time to complete healing at the end of the fifth week. This brief report cannot convey any idea of the desperate conditions we had to deal with and that the child recovered is entirely due to the power of the extract in giving strength to the overtaxed body of this profoundly infected child.

Case 2: John K., aged 2 years, was brought to Dr. McKernon's clinic on March 19, 1913, with a large subperiosteal abscess of ten days' duration, and was operated upon the same afternoon (staphylococlus aureus). His temperature at the time of operation was 103°, but fell to normal the following day and remained there until the fourth day. He then became suddenly ill and the temperature rose to 104°, pulse 136, and respirations 38, and this was accompanied by a constant cough. An examination of the chest showed marked crepitations over the lower right lung and a blood count showed 43,000 leucocytes, 75 per cent polynuclear and 25 per cent mononuclear cells. Ten cc. of the extract was given at once and repeated on the next day. It sounds like a fairy tale for me to tell you that the temperature fell at the end of forty-eight hours and that the lung conditions cleared up without going on to consolidation, but that is what happened and the same thing has happened in two other cases in which Dr. Dwyer was called and administered the extract. This child recovered rapidly and the mastoid wound was healed at the end of the third week.

Case 3: This case is the most remarkable, however, as it shows the cure of a streptococcus capsulatus mucosus bacteremia without operative measures. Jacob P., aged 6 years, was brought to Dr. McKernon's clinic on February 19, 1913, with the history of pain in the right ear of several days' duration but with no discharge. The previous history was negative. His father said that he had been having high fever and when seen the temperature was 104° As there was no vacant bed in the hospital, a paracentesis was performed but no fluid escaped, although the membrane was very red and had appeared to bulge. On the following day he was admitted into the hospital with a temperature of 104°. The pain in the ear had subsided and there was no tenderness over the mastoid, nor was there any thickening of the canal walls or other indication for operation except the high septic temperature. His blood count showed 16,000 leucocytes with 76 per cent polymorphonuclear and 23 per cent mononuclear cells. On February 19, he complained of severe pain in his left shoulder but this shifted to the right hip and groin on the next day, and Dr. Hutton, the attending physician, was asked to examine him. He reported: "That in the absence of any history it appeared to be a case of inflammatory rheumatism, but that the possibility of periostitis and osteomyelitis were not remote possibilities." Sodium salicylate was given for three days but without any effect. On February 21, the blood count showed 25,000 leucocytes, with 71 per cent polynuclear and 29 per cent mononuclear cells. A blood culture was ordered, but owing to some error was not taken until February 23, at which time the blood count showed 24,000 leucocytes, with 81 per cent polynuclear and 19 per cent mononuclear cells.

On February 22, a marked endocarditis was discovered affecting the aortic valves. Dr. Phillips saw the case with me, being the only surgeon in the hospital at the time, and advised against any operative measures. I should say that Dr. Rae had seen the case with me on two occasions and had also advised against operating, as we had nothing but the high temperature to indicate involvement of the mastoid. By February 23, there was marked thickening around the right groin and Dr. Berg, of Mt. Sinai Hospital, was called to see him. He found the condition to be a profound sepsis, but advised against any operative procedure at the hip for the time being at least. On February 24, our pathologist reported a marked bacteremia, the cultures showing numerous growths of an hemolytic streptococcus, this was later differentiated as the capsulatus mucosus. The leucocyte extract was then given daily in 10 cc. doses. An improvement was at once noted and there was a daily drop in the temperature, as shown by the chart. On February 27, the leucocyte count showed 11,500 leucocytes, with 75 per cent polynuclear and 25 per cent mononuclear cells, this being a most remarkable change showing the increased resisting power of the blood by the decrease in the total leucocytosis as well as the decrease in the polynuclear and the increase in the mononuclear cells, which Prof. Hiss claimed to be the most active bodies in resisting invasion by organisms. On February 28, after only five days use of the extract, a blood culture was found to be absolutely negative, even after forty-eight hours in the incubator, on four different media. On March 2 and 3 he was given more of the extract although there was no special indication, it being administered to aid the leucocytes in their efforts in throwing off the results of the profound sepsis which had been present.

On March 6 another blood count and culture were made and proved that the bacteremia had been overcome without any doubt, the culture being again absolutely negative, and the differential count showing a still further improvement, as follows: leucocytes, 13,000; polynuclears, 67.5 per cent; mononuclears, 31 per cent. and 1.5 per cent transitional forms. With this improvement in the character of the blood there was a corresponding change in the child himself. The heart murmur had almost disappeared, his appetite was good, he was happy and became a ward favorite with his sunny smile and good nature; but although all the swelling around the hip and groin had gone, he could not bend the hip to sit up, complaining of severe pain. On March 21, Dr. Phelps kindly applied a plaster casing around the body and the right thigh and after another blood culture and count showed well, (that is, good resistance and negative for bacteria), he was discharged and was taken home. Just what was present in or around the hip no one could say. An x-ray showed nothing and an exploratory puncture was unsuccessful in withdrawing any fluid. This case is remarkable and also unique in that it is the only case on record, so far as I know, of a cure of an actual streptococcic bacteremia without any operative measures having been used. There is no doubt but there would have been a fatal result in this case had it not been for the efficacy of the extract, for no one can appreciate the actual profound sepsis of the patient except those who watched him from day to day.

It was felt that two of these cases would terminate fatally, and the abortion of the pulmonary consolidation in the third was a most unusual and unexpected ending. As the extract was the only remedy used in all three cases, their recovery was surely due solely to its influence. In two other cases of pneumonia, occurring in the practice of other physicians, the attacks were cut short in much the same manner as in the one reported above, the extract being administered very early in the attack, so that it seems as though its future use, when given early enough, will prove a great blessing. Dr. Dwyer has kindly prepared a record of cases in which the extract has been used in the practice of a large number of physicians each of whom have sent in their bedside-notes with the reports of their cases. He personally saw most of the cases before giving the first dose, and the writer has marvelled at the recovery of many of them after hearing of their original condition.

In erysipelas and in true lobar pneumonia it acts in many cases as though it were a true specific, the relief to the patient being felt very quickly after the first injection. It should not be necessary for me to say that it is not, strictly speaking, a specific for anything. There is invariably a fall of temperature with a marked improvement of the heart beat. Delirium generally disappears rapidly and the patient tells of his relief and feeling of increased strength from the beginning. During the past year over 1,000 rabbits were used, each giving an average of 30 ccm. of the extract. As the average dose has been 10 ccm., this will give some idea of how extensively it has been used, and I wish it were possible to read some of the many personal letters that have been sent by the physicians who have used it. Even the faculty of the College of Physicians and Surgeons, in whose laboratory all of the extract has been prepared, had no idea of the extent to which it had been used or of the brilliant results obtained, until after Prof. Hiss' death and Dr. Dwyer was asked to give them a full report of the work that had been done. For years Prof. Hiss bore the entire expense of preparing and furnishing his preparation, for he refused to proclaim his work until clinical results would prove its value. It should be borne in mind that this is not, in any sense, either a vaccine, antitoxin or specific. It has no connection whatever with any bacteria, but is purely a physiological extract and emulsion of the leucocytes themselves, which, on being injected into the cellular tissues, is taken up into the circulation and furnishes food to the overtaxed and exhausted leucocytes in the body, thus allowing them to renew their fight in overcoming the effects of the toxins and even the living organisms which may be present in the system.

The necessary dosage for any one or for all cases cannot, as yet, be given definitely. No two cases ever present exactly the same clinical pictures, so that each case must be a problem in itself and the successful use of the extract will depend upon an intelligent administration after careful examination of the heart and in many cases upon the correct interpretation of a differential blood count, which will always show the resisting power of the blood. The writer feels that a large number of patients would be greatly helped in their convalescence, if careful counts were made frequently and the extract were administered whenever diminished resistance was shown by such counts. One important factor in its favor is that it has never been known to have produced any bad effects; it invariably increases resistance, and even in those patients who have not been saved the fatal end has been delayed many days. No medicine has ever been put to more severe tests than has this extract, Dr. Dwyer not being called to see the cases, generally, until they were almost *in extremis* and it was felt that nothing could save them.

Now that proof of its great value in most desperate cases is undoubted, it is to be hoped that the rationality of its use will be recognized by all, and that the many laboratories connected with our hospitals will take steps to prepare the extract for themselves and so be able to keep a supply constantly on hand to be used, not as a last resort, but to prevent the complete overpowering effects upon the patients of toxins or bacteria, and their products, that, with the aid of the extract, he should be able to throw off before his resistance becomes so lowered that nothing can save him. The method of preparation was given in detail by Prof. Hiss in his first paper, that of 1908, and is practically the same at the present date except that it has been found that it could be put out in twice the original strength without injury to the cellular tissues and for the past two years that has been done.

Dr. Dwyer has kindly prepared the following table: "This series of 39 cases occurring in nasal and aural diseases have been treated with the leucocyte extract: 1. Sinus-thrombosis, without positive blood-culture, 11 with 9 recoveries and 2 deaths. 2. Sinus-thrombosis with streptococcus in the blood-culture, 3 recoveries and 2 deaths. 3. Sinus thrombosis with streptococcus mucosus capsulatus in the blood-culture, 1 ending in death. 4. Septicemia: (a) Streptococcus mucosus capsulatus, 1 ending in recovery; (b) streptococcus pyogenes with acute endocarditis, 3 and all recovered; (c) pneumococcus, with acute middle ear, pneumonia and endocarditis, 1 case with recovery. 5. Clinical septicemia with endocarditis, following mastoiditis, 3 cases with 2 recoveries. 6. Meningitis: (a) Serous meningitis, 3 cases all recovered; (b) purulent meningitis, with the organism demonstrated in the cerebro-spinal fluid, 3 deaths and 1 recovery. 7. Mastoiditis complicated by pneumonia, 3 cases, all recovered. 8. Frontal sinusitis, complicated by clinical meningitis, 1 case with recovery. 9. Streptococcus sore throats, 5 with quick recovery in each.

This series is limited strictly to aural and nasal diseases and their complications, but in addition to the above we have a whole series of cases of septicemia and such conditions due to infections in other parts of the body and our results on the whole are just as favorable.

We have, besides, a series of 148 cases of all kinds of erysipelas and will give the analysis of the results obtained in this series of cases.

STATISTICAL ANALYSIS OF ERYSIPELAS CASES.

Age of Patient	No. of Cases	Time of Treatment		Average Duration of Treatment	Termination of Cases	
					Recovery	Death
Infants (up to 1 year)	12	Early*	5	4 days	3	2
		Late	7	6 days	5	2
Children (1-15) years)	14	Early	5	1.5 days	5	
		Late	9	3 days	9	
Adults (15-50 years)	110	Early	44	2.2 days	44	
		Late	66	3.5 days	66	
Over 50 years	12	Early	5	1.5 days	5	
		Late	7	3.7 days	6	1
Total	148	Early	59	2.3 days	57	2
		Late	89	4.05 days	86	3

*Early—Treatment begun within three days of appearance of lesion.
Late—Treatment begun later than three days after appearance of lesion.

RECAPITULATION.

Total number of cases treated—148; recovered 143; mortality 3.39%.
General average duration of treatment—3.18 days.
Number of recoveries under 1 year old—8 out of 12.
Per cent of recoveries under 1 year old—66.6%.
General mortality rate—(all cases) 3.39%.
Mortality among patients over 1 year—.73%; recoveries 99.27%.

40 East Forty-first Street.

Carcinoma of the Tongue Following Epidermolysis Bullosa (Dystrophic Form). Klausner. *Arch. f. Dermatol.,* Bd. 116, Heft 1, 1913.

In a girl of 25 years suffering from epidermolysis bullosa, carcinoma of the tongue developed. The author feels that supersensitiveness and disturbances in the anlage of the epithelium which occasionally, in cases of epidermolysis bullosa, lead to thickening of the mucous membrane or leucoplakia were in this case responsible for the glossal carcinoma. Ed.

REPORT OF A CASE OF NASAL POLYPI INVOLVING THE ORBIT, FRONTAL SINUS AND ANTERIOR FOSSA OF THE SKULL.*

DR. WM. R. CHAMBERLIN, CLEVELAND, OHIO.

The following case is unique in my own experience. In a rather careful review of the literature I have been unable to find any similar condition described. I therefore venture to report it more or less fully.

Wm. G., aged 41, was referred to me on October 18, 1912, on account of a discharging sinus beneath the left eyebrow. The history which he gave was as follows: Several years before, masses of polypi had been removed from both sides of the nose, affording him relief from the nasal obstruction of which he had complained. After a time this obstruction again became marked and three months before consulting me he first noticed a discharge from beneath the left eyebrow. There was no history of pain and the trouble had not prevented him from performing his daily work, that of laborer in a steel mill.

Examination revealed a rather pronounced exophthalmos of the left eye, considerable swelling of the soft parts above it and a fistula immediately beneath the center of the eyebrow. Through this fistula there discharged a thin, grayish yellow pus. A probe introduced into the fistula revealed some denuded bone and passed into what was apparently an unusually large frontal sinus. Both nasal fossae were completely filled with polypi. Inasmuch as the patient was otherwise in good health and had experienced no great discomfort from the trouble in question an attempt was made to free the left fossa under cocain anesthesia at the office. Enormous masses of polypi, as well as a portion of the ethmoid labyrinth were removed. It was not possible, however, to remove all of the polypi, on account of the bleeding which obscured the field. The patient returned to his home and was not seen until the third day following the operation, when he reported a fair degree of breathing-space on the left side. The drainage through the nose, however, had not caused any decrease in the swelling above the eye.

Four days after the first operation he was sent to Lakeside Hospital for operation under general anesthesia. X-ray plates were made upon his admission, in both the lateral and antero-posterior planes. These plates gave a distinct shadow extending from the median line to the lateral skull-wall and from the anterior wall to a line passing just anterior to the external auditory meatus, apparently filling most, if not all, of the anterior fossa of the skull.

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*Read at the annual meeting of the American Laryngological, Rhinological and Otological Society, Washington, D. C., May 8, 1913.

A Killian operation had been contemplated but, on account of the condition shown in the radiographs, it was decided to open the skull cavity through the frontal sinus and to rely upon the findings as a guide to the operative procedure. A curvilinear incision through the eyebrow was made and carried down to the bone. Skin and periosteum were then reflected upward as far as possible. On removing a portion of the anterior sinus wall, above the inner canthus, a plate of bone was encountered lying free and quite movable.

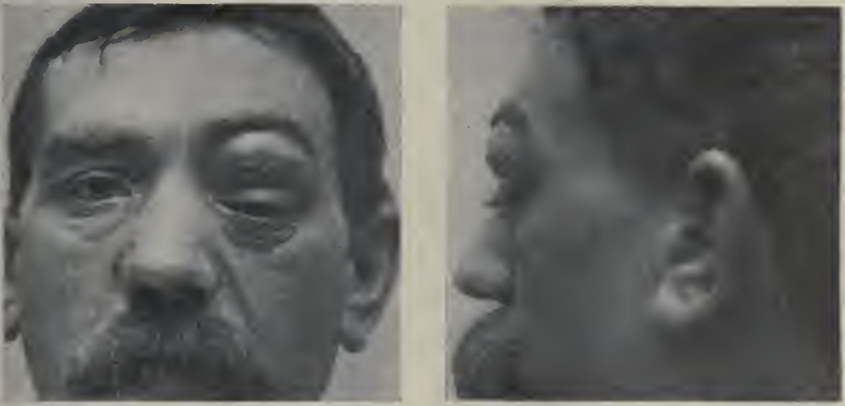

Figure 1. Figure 2.

Before operation.

This proved to be the posterior wall of the sinus and was removed as a sequestrum. Masses of tissue resembling the convolutions of the brain immediately bulged through the opening. There was no pulsation, however, while the color was that of the ordinary nasal polyp. To afford greater working space a vertical incision, joining the first incision at right angles, was carried upward for 4 cm. while the anterior cranial wall was resected over an elliptical area 3x5 cm. Not knowing where the dura might be encountered or what its condition would be, the tumor mass was removed very carefully piecemeal with broad blunt forceps. The mass removed appeared to be the ordinary nasal polypi and measured fully one-fourth liter in amount. The only point of origin within the skull-cavity was a pedicle fully one cm. in diameter, and situated at about the center of the internal or median wall. When this was severed there was some bleeding but this soon stopped without ligation. After the mass had been entirely removed a cavity was disclosed, lined with smooth walls and apparently co-extensive with the anterior fossa of the skull. The forefinger introduced into the cranial opening failed to reach its posterior boundary.

Attention was now directed to the orbital roof, which was removed wherever necrosed bone was discovered. A large-sized curette was then readily passed through what was evidently the fronto-nasal duct and masses of polypi removed from it. After curetting, this passage was about 1½ cm. in diameter and seemed ample for drainage.

On account of the length of the operation, about one and a half hours, and the condition of the patient, which was not very favorable, it seemed best to reserve any further operative interference for a subsequent time. The wound was therefore packed with gauze and a wick carried through the enlarged fronto-nasal duct into the nose. After the usual outer dressing the patient was returned to the ward in good condition. Recovery, with the exception of delirium tremens, which developed on the second day and continued for forty-eight hours, was uneventful and the patient left the hospital at the end of one week. The eyeground was examined by Dr. W. E. Bruner, who found nothing abnormal. There was apparently no ill effect from the sudden relief of the intra-cranial pressure. Dr. Ruh, the resident pathologist, who examined portions of the mass removed reported them to be mucous polypi.

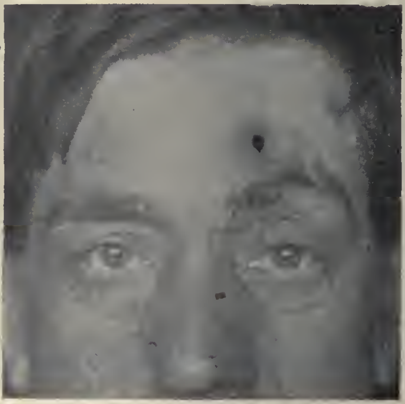

Figure 3. After operation.

Up to December 23, the patient reported at the office three times weekly for dressings. The external opening had gradually grown

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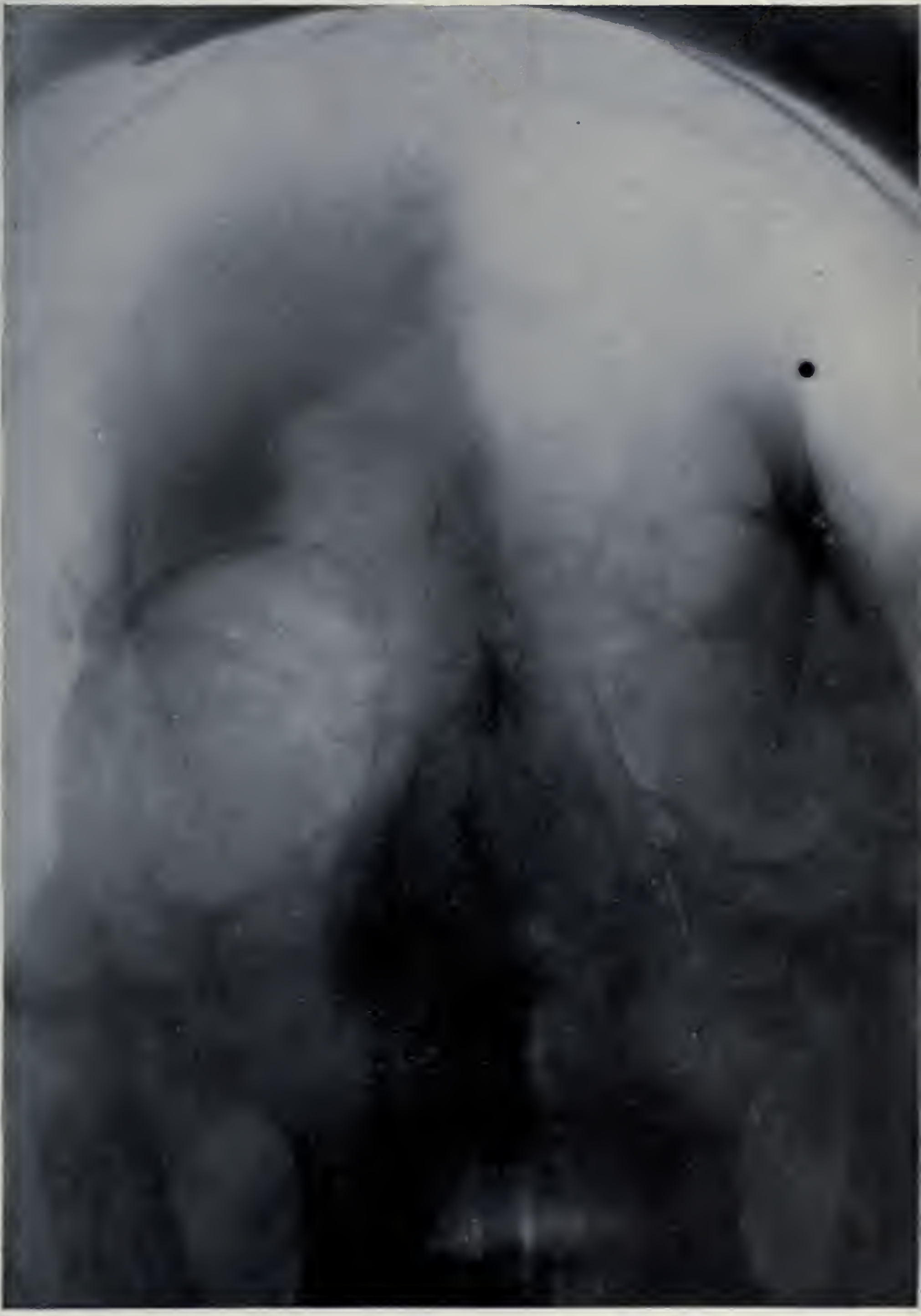

BEFORE OPERATION.

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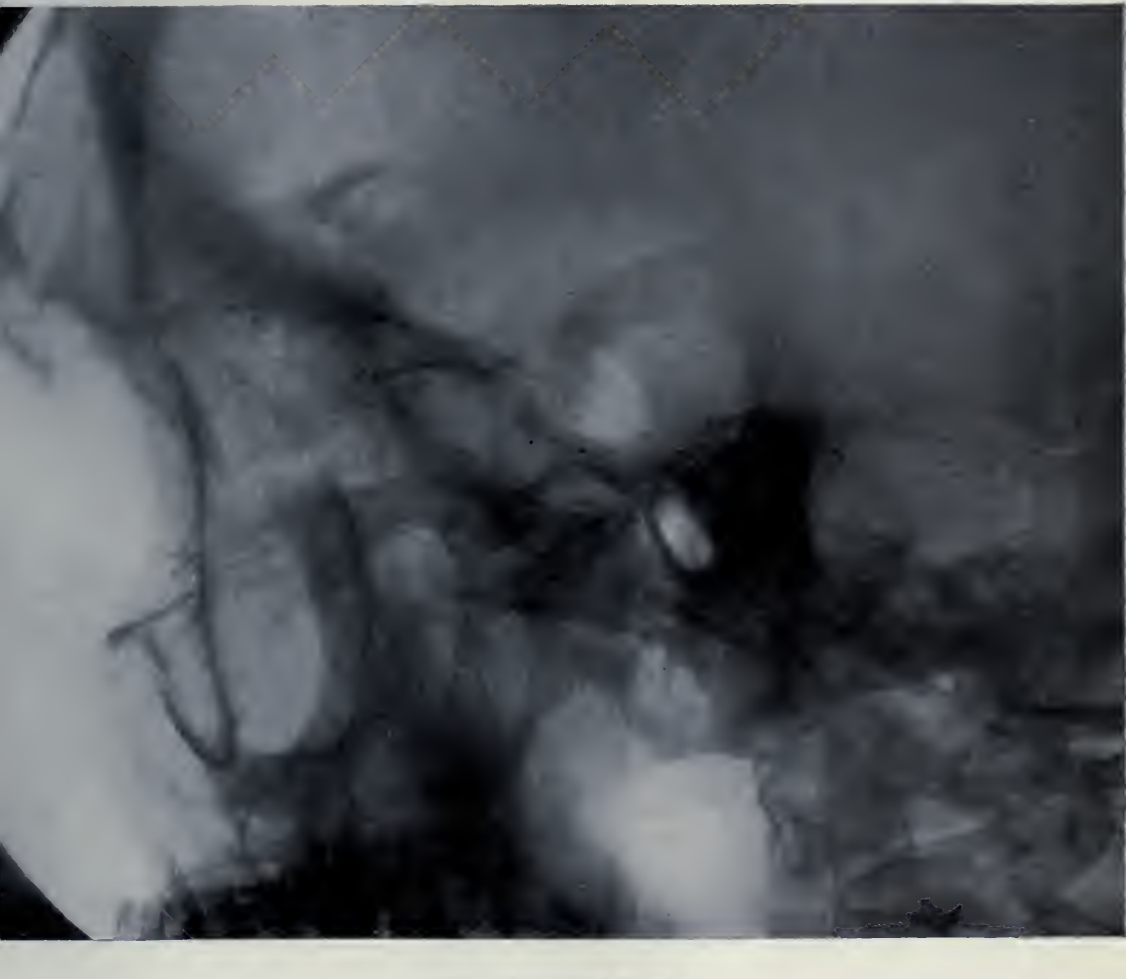

BEFORE OPERATION.

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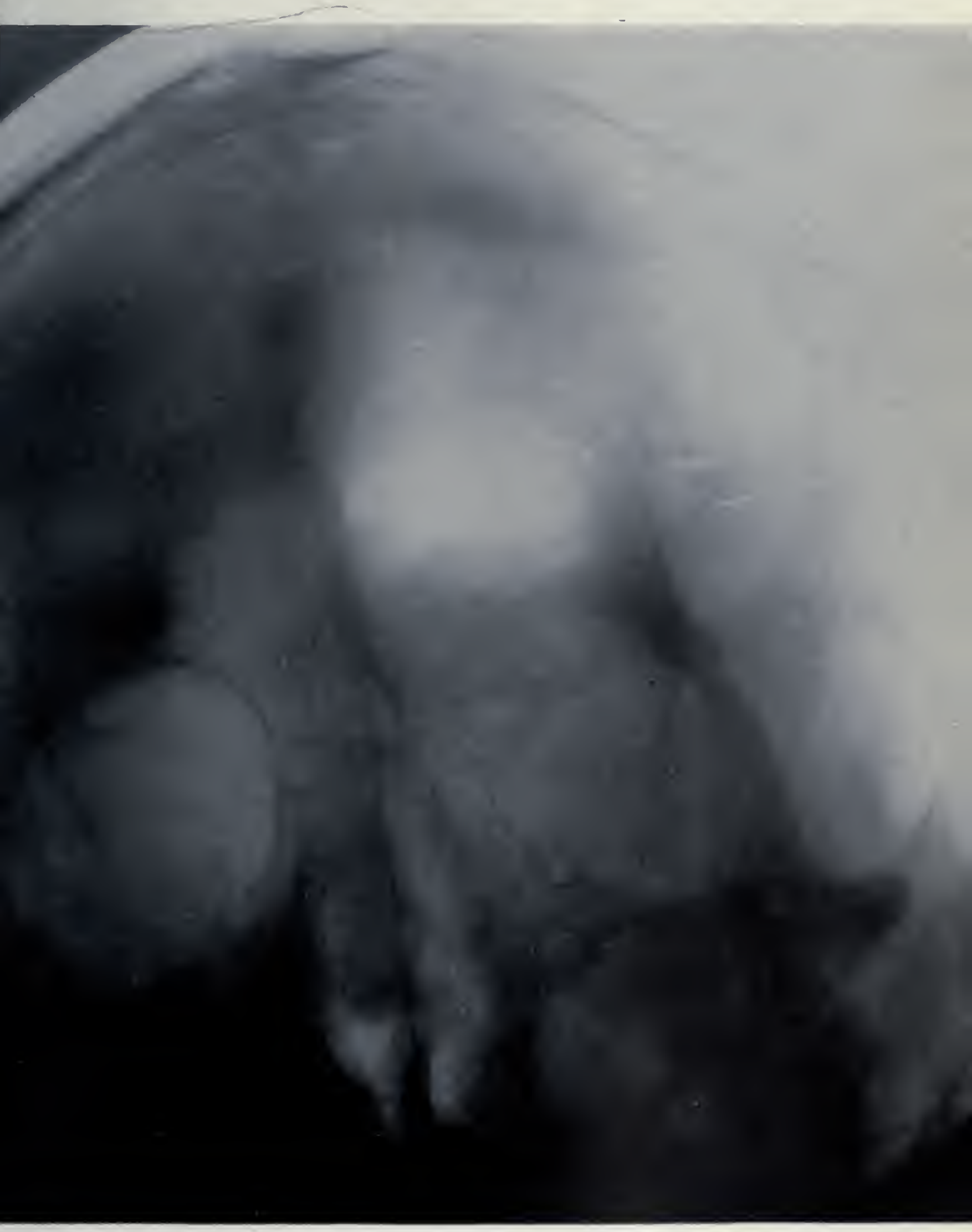
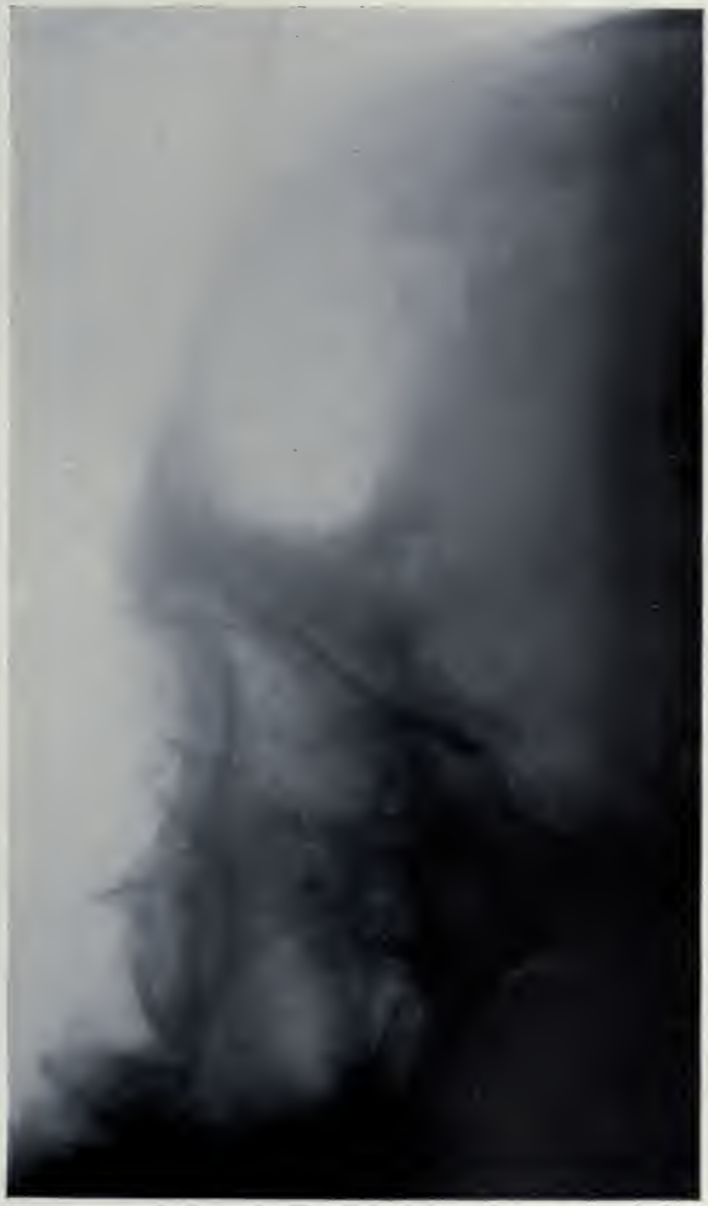


AT PRESENT TIME.



AT PRESENT TIME.

smaller until there was a union of the outer skin with the inner epithelium, leaving a permanent opening about one cm. in diameter. No attempt was made to close this, as the drainage through the nose has not been entirely free. At first gauze was carried through the fronto-nasal opening into the nose, but rubber tubing about ¾ cm. was soon substituted for the gauze. On January 1 the patient returned to his work, reporting once a week for dressing and examination, the other dressing being done by his family physician. On December 4 enormous masses of polypi, together with most of the middle turbinate and ethmoid labyrinth had been removed from the right fossa, and on February 1 more polypi and part of the middle turbinate from the left fossa.

The orbital sinus continued to discharge for a time after the patient left the hospital but finally closed and has remained firmly healed up to the present. The patient is now in the best of health and has worked steadily every day. Advantage was taken of an enforced vacation in attempting to render the nasal drainage more free by the use of Sullivan's rasps. This is now fairly free but not sufficiently so that the closure of the external opening can be considered safe. It may indeed be necessary to have him return to the hospital and secure nasal drainage by the typical Killian method. When the nasal drainage is unobstructed the external opening can be easily closed, and no doubt with safety to the patient.

There are several points of interest in regard to the foregoing case The first is the entire absence of symptoms following the loss or compression of so large a brain mass. There was no history of headache or paralysis while the mentality seemed good. The second is the presence of polypi in this situation. Mucous polypi in the frontal sinus are, of course, common, but their encroachment upon the cranial contents is most unusual. The absence of infection is striking. The third point of interest is the ultimate outcome. Will this cavity fill with granulations and so become obliterated or will it persist? My own belief is that it will remain practically the same size that it is at present. Through the anterior opening a good view has been constantly obtainable by means of a large-sized aural speculum. The walls are smooth and though there has been some pushing forward of the posterior wall this has been too gradual to make the complete obliteration of the cavity seem probable. The distance from the outer surface to the posterior wall, as measured by the probe is now 5 cm., while the distance to the extreme posterior external angle measures 7 cm.

Osborn Building.

A NEW AND EFFICIENT TREATMENT OF ATROPHIC RHINITIS.*

DR. K. K. WHEELOCK, FORT WAYNE, INDIANA.

I have treated atrophic rhinitis for many years without special benefit to patients except such as follows the use of cleansing solutions and the local application of argyrol. These patients have been only temporarily relieved of the fetor and dried accumulations of mucous. Every one who is familiar with nasal diseases recognizes in atrophic rhinitis a condition which has, so far, baffled the efforts of all men in all climes to cure. I need but quote St. Clair Thomson on prognosis to voice the position of all authorities on the outlook, up to the present time, of the treatment of atrophic rhinitis. He says "Diseases of the Nose and Throat" (Edition, 1912): "This affliction is the opprobrium of rhinology and it would be rash to promise a cure in any well-marked case. At the same time the patient can generally be comforted with the assurance that treatment will remove the offensiveness of the complaint and render her tolerable to her fellows; but the treatment must be kept up indefinitely.

The etiology of atrophic rhinitis is as obscure as the knowledge of the successful treatment has been hitherto unavailing. We may divide the general causes into: (1) structural, such as relate to narrowness and openness of the nostrils; (2) secondary effects of sinus disease; (3) bacterial infection; (4) constitutional syphilis, tuberculosis. atrophic neurosis, etc. Such a diversity in the factors of causation argues a want of knowledge of etiology.

Pathology: The striking result is atrophy of the mucous membrane which becomes merely a covering for the bony framework of the nares and the lines of the turbinates stand out in startling osseous clearness. The ciliated epithelium changes into stratified epithelium: the capillaries and venous spaces are obliterated; the walls of the small vessels are thickened; there is a round-cell infiltration about the mucous glands and the whole structure is changed into dense connective tissue. We have, then, the general atrophy of epthelium, basement membrane, glands and bone as well as lymphoid cells and blood-vessels. No wonder there seems no help.

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*Read at the meeting of the Fort Wayne Medical Society, April 1, 1913.

I will not dwell upon the symptoms. Let it suffice to say that in Germany the condition is called "Stinknase;" in France "La punaise." The disease is four times more frequent in women than in men. St. Clair Thomson says "as a rule she has anosmia, but up to the time of the loss of the sense of smell the odor is worse during the catamenial period." Associated with atrophic rhinitis there are ocular disturbances as well as constitutional symptoms which may be both infective and psychical. My cases have markedly improved in physical health. In November, 1912, I began the use of "scarlet red" in the treatment of two cases of atrophic rhinitis which had been under observation for some months without notable improvement. After the continuation of the medicine for two weeks I noted a marked improvement. In the first place the accumulation of the secretion became much less in quantity and the character of the secretion changed markedly. From a heavy dark-brown crust requiring to be removed with forceps it became a mucoid, diffluent collection which could be discharged by blowing. In the second place from a membrane stretched tightly over the bony scrolls and walls of the nares, presenting a shiny dry appearance, the mucous surface became thick and velvety as compared to the former state. The patient began to see an improvement which was manifested by less and less secretion. In these two cases, one a male, Mr. L., the other a female, Miss S., we had the remarkable condition of a large and bulky growth of membrane over the inferior and middle turbinates in marked contrast to the appearance previous to the treatment. The covering before the treatment with "scarlet red" was a thin, pale, dry parchment-like membrane drawn over the turbinates, the nasal walls and vault of the pharynx. The vault of the pharynx could be readily seen through the nares. The membrane seems now not only to have an epithelial covering but also to possess a thick basement layer. It is evidently more vascular. The faucial wall cannot now be seen through the nares owing to the thickened membrance of the turbinates. Under a weak solution of cocain and adrenalin the turbinates shrink and behave as does the normal mucous membrane.

My method of treatment is to remove all crusts by lavage with a warm solution and forceps, dry the membrane with cotton, then apply the salve over every millimeter of the membrane with an applicator wound with cotton. The oro-pharynx is also treated in the same manner. No ill effects have followed the free use of the medicine. At first I made the application twice a week. Now after three months' use I find once in two weeks to be sufficient.

Clinically the cases show marked improvement while symptomatically the patients wish to consider themselves well. The sense of smell has returned and where before, the act of eating was merely perfunctory it is now attended with satisfaction. Both have gained in weight and the chronic indigestion from which Mr. L. suffered has disappeared.

My third case, Miss K., was taken on January 17, and the turbinates are filling out with epithelium, new blood-vessels and probably basement membrane as well. In her case the appearance of the oral fauces is so changed that it would be difficult to say we had an atrophic rhinitis to deal with. Sensation has returned to the nasal mucous membrane. When I first began the treatment of these cases with "scarlet red" the application of the salve to the mucous membrane was attended with no apparent distress, now there is every evidence of acute irritation as is shown by the patient's complaints as well as by lacrimation. It seems, then, that the nerve filaments have also been regenerated.

It may be unnecessary to review the literature of analin and its combinations; so I shall refer the reader, who is interested, to Dr. John Staige Davis' articles published in the *Annals of Surgery,* January, 1910, and May, 1911. Dr. Davis makes reference to sixty cases of granulating sores treated by "scarlet red" and refers to Fisher's first use of it, together with the conclusions which other observers have drawn from its use. I am sure that clinically a new epithelium has been formed in my cases of atrophic rhinitis, a new basement membrane has been formed, new blood-vessels have developed and new nerve-filaments have appeared.

How long the regenerated tissue will remain as now seen, time will determine. My patients have received such marked benefit from the use of "scarlet red" that I cannot but share their enthusiasm and offer this treatment as the best for the relief of these, hitherto, hopeless cases.

1020 Harrison Street.

Syphilis of the Nose and Throat. H. H. MARTIN, *South. Med. Jour.*, Jan., 1913, p. 19.

In this article the initial, secondary manifestations of syphilis, especially in the new-born, are very briefly discussed. As effective therapy the author mentions "black-wash," a mixture of calomel and lime water.

ED.

THE INFLUENCE OF SOUNDS OF DIFFERENT PITCH, DURATION AND INTENSITY IN THE PRODUCTION OF AUDITORY FATIGUE.*

DR. WALTER A. WELLS, WASHINGTON, D. C.

It seems to be a universal law in biology that when any living substance is required to be active a certain length of time the phenomenon of *fatigue* sets in, manifested by a depression of irritability and a lessened capacity for work; if in spite of these symptoms, and the sensation of fatigue which generally accompanies and is intended by nature as a reminder of the evil effects and a warning to desist, the stimulation is continued, the ultimate result is *exhaustion,* marked by complete incapacity for further activity. In the case of voluntary function this is the ultimate stage, because there can be no further activity in an organ which refuses to respond to stimulus.

A muscle that is exhausted cannot be stimulated to further action by an effort of the will. In the case of those functions which receive stimuli involuntarily from the outside world these stimuli might be continued in spite of exhaustion, resulting ultimately in a third and still more advanced stage—viz., *degeneration and destruction.* In the case of the auditory function, we have both clinical and experimental proof of the degeneration of Corti's organ from excessive stimulation.

We have known for a long time not only that sudden very intense noises of the character of violent detonations may produce labyrinthine concussion, but also that certain occupations, such as that of coopers, tin-smiths and boiler-makers, which are attended with constant, loud and disagreeable noises, may produce absolute deafness due to nerve degeneration. Recently, Wittmaack, Marx and Yoshii have made experiments to prove that continuous intense noises are capable of producing degenerative change in Corti's organ, but they have not agreed in their interpretation of these findings with regard to their bearing upon the Helmholtz theory of audition.

Because ordinary fatigue is more easily demonstrated in the muscular fibers than in any other part of the body, physiologists have generally selected this element for their experimental studies of fatigue phenomena. And so, by their painstaking researches, some highly interesting facts have been evolved governing the phenomena of fatigue and exhaustion as displayed by muscle. All are agreed at the same time that the nervous system, although eluding the application of the same fine analysis, is no less subject to fatigue than other parts. This, however, is not equally true of all parts, for while nerve fibers are so resistant to fatigue that one author (Wildenskii) goes so far as to assert that they are indefatigable, it is the consensus of opinion that nerve cells fatigue with unusual readiness.

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*Read at the nineteenth annual meeting of the American Laryngological, Rhinological and Otological Society, Washington, D. C., May 10, 1913.

The extreme delicacy of Corti's organ is such that *a priori* fatigue might be expected to result with but slight provocation. The auditory nerve and papillae are exposed, as no where else in the body, to a liquid which readily varies in its physiological composition and tension. We know, most of us from our personal sensations, how by mere emotional effects we may get a surtension of the labyrinthine fluid that can make us aware of the pulsatile tinnitus from the carotid. The frequency of tinnitus of all kinds is an evidence of the irritability of the cochlear part of the labyrinth, just as the common occurrence of vertigo from slight causes indicates the sensitive nature of the nerve fibers and cells distributed to the semi-circular canals.

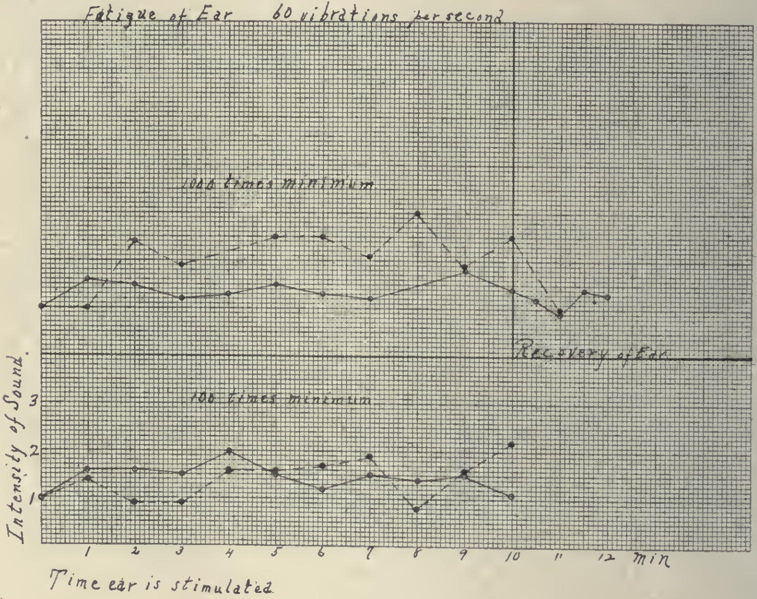

Figure 1.

As the function of audition is a very complex one, which requires for its perfect operation the concomitant activities of several kinds, it may be inferred that auditory fatigue is similarly a complex phenomenon, made up of different and diverse factors, the relative importance of which it is indeed a difficult matter to determine.

First of all our thought naturally centers upon that marvelous peripheral organ, situated in the cochlea, where, according to Mueller's law of specific energies of the senses, if not the most important certainly a very essential part of the work is performed. But the delicate mechanism of the middle ear must not be overlooked, for, as a muscular action comes into play in its duty of transmission and delivery of the sound-waves in the most effective manner, fatigue effects here must be expected. And it is especially in muscular action that the phenomena has been observed and demonstrated. That the tensor tympani contracts under the reflex stimulus of sound was shown some time ago by Hensen and Bockendahl, and in this they have been confirmed since by other investigators. Pol lak found that though sound was conveyed to one ear, a corresponding reflex contraction would also occur in the tensor tympani of the other side. It is noteworthy that his experiments seemed to show that the higher in pitch the sound stimulus, the more marked was the resulting contraction.

The hypothesis seems fairly rational, that it is the special function of this little muscle to bring about different degrees of curvature and tension in the membrana tympani, in response to the impact of vibrations of varying degrees of frequency, so that this membrane might be attuned as it were to respond with a maximal sensitiveness to sounds of different pitch. May we hazard the conjecture, without experimental support, that the stapedius, innervated as we know by an entirely different nerve, responds for its part only to differences in amplitude, contracting with greatest force to sounds of greatest intensity.

From its attachments, we can infer that contraction by pulling on the oval window lessens labyrinthine pressure and by its action upon the ossicular chain brings about relaxation of the drum membrane. These are certainly both protective functions which might have a most useful purpose in case of sounds of excessive intensity. This contraction of the muscles of the face, especially the orbicularis, which accompanies stapedial contraction is very suggestive in this connection.

Another factor which plays a conspicuous role in audition, and which must be seriously reckoned with in the estimation of fatigue of this function, is the faculty of attention. Consciously or unconsciously by the exercise of this faculty we sensibly facilitate the function of hearing in the higher centers producing a state of preparedness and expectation which favors receptivity of the sensorial image. Also there is probably at the same time a drifting centralward of energy, which though it may not increase the intensity of the impression certainly tends to a better definition of the cortical image.

Attention is probably not confined in its influence to the cerebral apparatus, but exerts also a favoring influence upon the muscular mechanism of the middle ear to which we have referred. By increasing the tonus of the muscles, it may have the effect of placing the articulations and the ossicular chain in the necessary state of elasticity and suspension, which, as Bonnier expresses it, render these in a higher degree susceptible to vibratory solicitations.

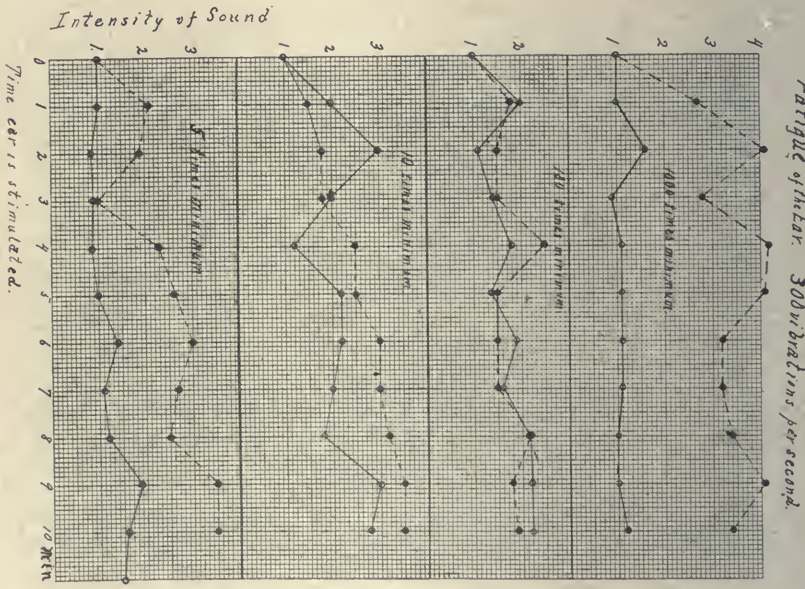

Figure 2.

To return more directly to our subject, suppose we are able to uncover certain facts and formulate certain laws in regard to auditory fatigue how can this information be of either theoretical or practical value:

Theoretically it has seemed to us that it offers a fruitful field of study of the auditory function. This is a very natural supposition accustomed as we are in medical science to judge what is normal by a study of abnormal manifestations, and to make deductions in regard to functions of an organ by observing its disturbances.

One of the experiments which we instituted, has, as we shall see later, a direct bearing upon the much contested function of the cochlea and tends to confirm the neo-Muellerian theory which applies the law of sense energy to quality as well as modality.

Practically the information derived from a study of auditory fatigue may possibly be utilized in connection with the recently launched propaganda for the suppression of unnecessary noises, as showing under what condition sounds produce injurious effects.

Furthermore such experimental studies might prove of practical value in giving a suggestion or establishing a criterion for the possible utilization of acoustic exercises in the improvement and strengthening of failing audition. So far as our researches in the literature go there have been but few attempts at a systematic study of this important subject of auditory fatigue.

Corradi pointed out that when a tuning-fork, held against the mastoid, ceased to be heard, was removed and after about two seconds interval replaced, the sound-perception was renewed. This might sometimes be repeated once, twice or three times. Hammerschlag made similar observations with regard to aerial conduction of tuning-fork vibration. Eitelberg observed that some individuals after listening for about forty-five seconds to the sound of a watch, would lose the sound or hear it with less intensity.

Recently Vasylieff, a Russian Army Surgeon, made experiments upon soldiers with reference to auditory fatigue. He compared a great number of times the duration of the vibration of forks of different pitch in the cases of a number of soldiers with his own, which had in each case been previously determined. He concluded that the law of Du Bois-Reymond, as regards excitability of motor nerves, may be equally true of the end-apparatus of the auditory organ. With regard to difference in pitch he found that fatigue of the auditory nerve with sound-transmission through the air is much greater for high tones than for low.

The chief fault with experiments of this kind is that the instruments employed do not permit of a satisfactory measurement of the sound stimulus. Sensation itself is not actually capable of mensuration so that its power can really only be stated in terms of the energy employed to produce a given sensation. We must, therefore, in estimating fatigue, make use of a source of sound whose intensity can be easily and exactly measured.

The author's experiments were conducted at the Government Bureau of Standards, with the able assistance of Dr. Harvey Curtis, one of the physicists whose expert knowledge of electricity was indispensable in such work. We employed as the source of sound a special machine which furnished an alternating current capable of giving a frequency of from 60 to 3,000 cycles per second. A measured current for this machine is passed through the primary of a variable mutual inductance. An alternating current having a very pure sinusoidal wave-form is thus produced and sent to a specially constructed sensitive telephone. This current may be easily varied and measured.

It is assumed that the intensity of the sound is proportional to the current, though if this intensity be defined as proportional to the square of the amplitude, the intensity is proportional to the square of the current. In this method the fatigue will appear more marked than is shown by the curves.

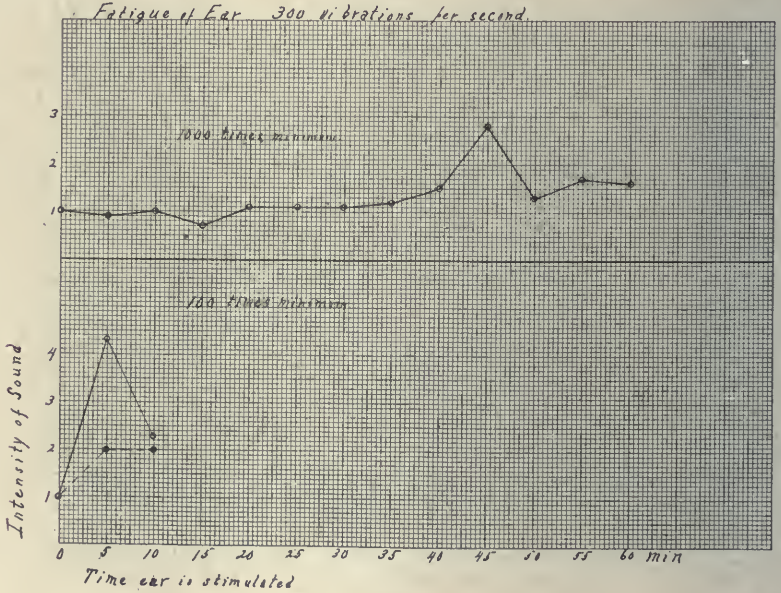

Figure 3.

The method of procedure for the demonstration of auditory fatigue was as follows: We first determined for the subject his threshold of intensity for a given pitch, that is to say, by carefully testing we determined the lowest possible intensity necessary to produce a clearly recognizable sound-sensation of that particular pitch. In testing this for fatigue we would now augment the intensity of this original threshold or liminal value 10, 100 or 1,000 fold, as the case might be, and expose the subject's ear to this multiplied intensity a determined length of time. The hearing would then immediately thereafter again be tested, to discover if the original threshold had been lowered or raised and how much. This process could be repeated any number of times.

The results of the tests are graphically shown in the accompanying charts. They have not been made upon a sufficient number of subjects nor repeated a sufficient number of times to permit us to draw sweeping conclusions, but they were at least suggestive enough to enable us to make a few observations which may be summarized as follows:

In practically every instance by this method we were able to demonstrate a greater or less degree of fatigue, which seemed to vary not only with pitch, duration and intensity, but with the general condition of the subject at the time of the test, and especially with the state of his attention or with the disturbing noises even though they were very slight.

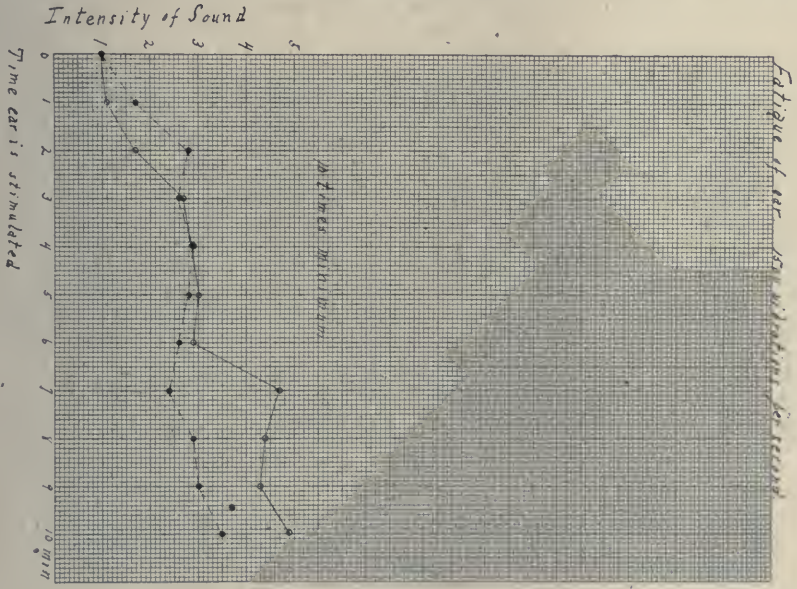

Figure 4.

With regard to influences of differences in pitch, we found that towards the middle of the range the auditory organ was most resistant, and that it was especially manifest as we approached the two extremities either upward or downward. This is probably due to the fact that the middle zones of the ear are the most practiced and, therefore, the most developed; for we know that though the human ear has a range of about eleven octaves the range of conversation does not extend beyond five and is chiefly comprised within about two or three, extending upward from say 80 to 640 vibrations per second. Wien, Quix and Zwaardmaker have in fact demonstrated by painstaking tests that we have for the tonal scale a zone of maximal sensitiveness just as we have an area of greatest retinal sensitiveness. This zone has been found by these authors to extend from C^1 to G^4.

One, at first thought, might suppose that the more sensitive the part, the quicker it would manifest fatigue-phenomena, but such is not the case, its great sensitiveness being rather an evidence of its development into an organ of greater perfection and strength. There is probably in these areas a more rapid recovery than in the less developed parts of the cochlea, in accordance with the observation made by Mateucci that the recovery from fatigue-effects occurs with greatest promptness in cells which show the most marked excitability.

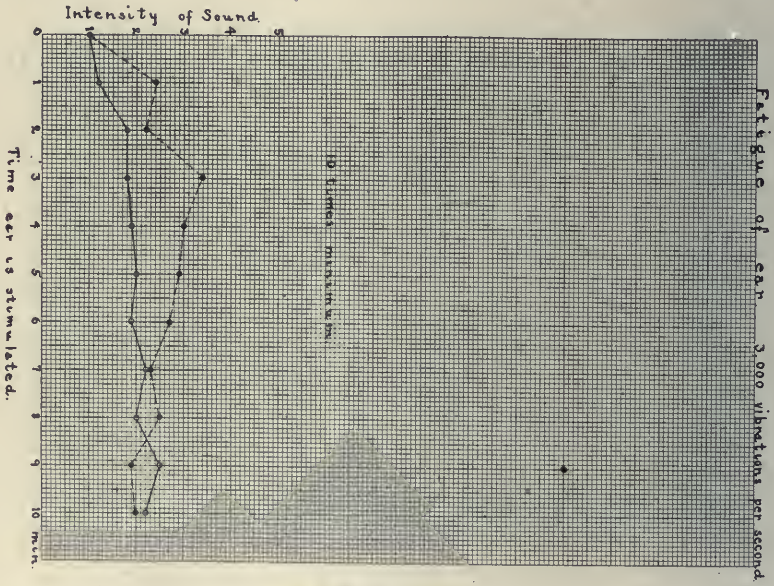

Figure 5.

As did Vasilyeff, we noticed that the higher notes were generally more fatiguing than the low. This might be explained by the fact that in the high notes greater number of vibrations must be perceived in a given period. It is quite in accord with the observation that with the same energy a greater psychical intensity is produced by high notes than by low.

Of all the experiments undertaken there was none so apparently conclusively as that done for the purpose of proving whether auditory fatigue for a certain note was restricted to that note or would be at the same equally manifest for the notes far removed in the scale.

We selected for this experiment notes of the vibratory frequency of 60 and 900 per second respectively. The method consisted in exposing the ear first to one of the notes raised to an intensity of one thousand times its normal liminal value for the duration of a minute, then testing for the threshold value of each, taking them alternately. We found that in either case whether we fatigued on the high and compared with the low, or on the low and compared with the high, that while the liminal value ascended considerably for the fatiguing note, it held normal value for the other. This experiment seems to indicate that separate cochlear areas are concerned with separate notes and bears out the Helmholtz conception of the auditory function.

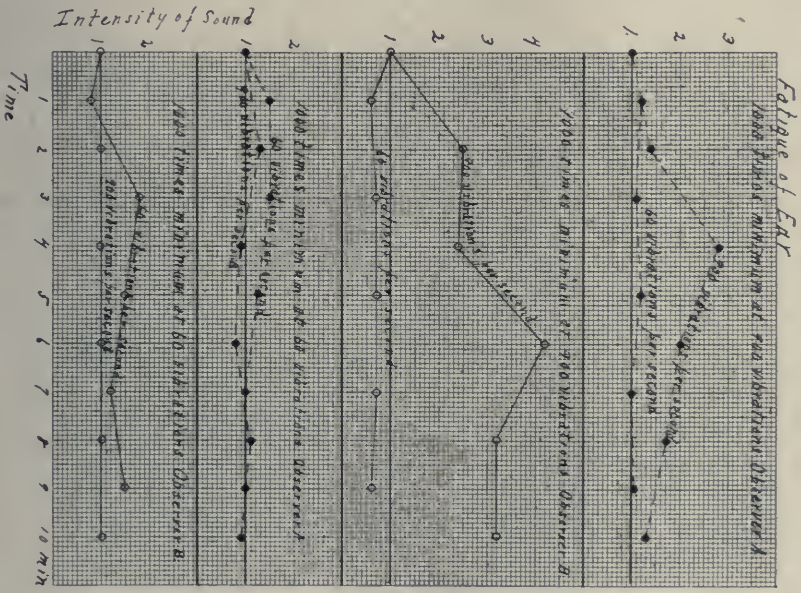

Figure 6.

In order to give a physiologic basis to his theory, Helmholtz, we know, carried the doctrine of specific energy as proposed by Johann Mueller to a point decidedly beyond that in the mind of the propounder. Mueller maintained that every sense-organ, if the stimulus be adequate, responds with a sensation peculiar to that organ. The olfactory organ, no matter how stimulated, can give rise only to sensation of smell, the retina only one of vision, and so on. This is a specialization of function which applies to modality only.

Helmholtz and his followers extended it also to differences in the quality of the sensation, when they maintained that for vision there must be separate nerves and cells for different colors, and in the case of audition separate nerves and cells for vibrations of sound which differ in pitch. Thus was built up his theory of sympathetic resonance, which regards the cochlea as a vast congeries of resonators each attuned to a different vibratory frequency corresponding in number and variety to all the notes within the range of audibility.

As regards intensity we were not able to see any direct ratio between fatigue and the grades of intensities which we used. In the higher intensities with the deep notes a booming sound seemed to linger in the ear as sort of an after-image of which rendered it difficult to ascertain the threshold quickly in such cases. Sounds of low intensity approaching the threshold were especially fatiguing because the factor of attention came here particularly into play.

Finally our experiments, while they demonstrated conclusively the fact of fatigue in the auditory organ, at the same time served to impress us with this organ's wonderful powers of recovery. We found that we required an average of fifteen seconds to pass from a fatiguing sound to zero and thence ascertain the liminal value. Uncertainties in our mind of what we heard would sometimes cause delay and in such case we found that even a few seconds additional decidedly affected the result. We found that where the ear showed a high fatigue-value, that in testing at intervals of fifteen seconds, it gradually fell back and was generally normal in one or two minutes.

Considering how constantly the ear is exposed to sounds not only from without but also to some of intrinsic origin, it must be owing to this wonderful recuperative power that it does not show more frequently evidences of fatigue or even of a degenerative change.

The Rochambeau.

Roentgen Therapy in Otosclerosis. H. ORTLOFF. *Arch. f. Ohrenh., Bd.* 90, *Heft.* 4, 1913, p. 233.

Contrary to the results reported by Joulin and Schwarz, Ortloff does not find radiotherapy of permanent value in otosclerosis. Occasionally the deafness is ameliorated but this is only temporary. Further experiments are urged. ED.

THE SUB-PERIOSTEAL TEMPORAL ABSCESS OF OTIC ORIGIN WITHOUT INTRA-OSSEOUS SUPPURATION*.

DR. HENRI LUC, PARIS, FRANCE.

The aim of this short paper is to convey to the knowledge of my American colleagues a special complication of the infection of the middle-ear, the first description of which I published in 1900. Other examples of it have been published since then, either by myself or by some of my colleagues (in Belgium, Vues; in France, Pecharmant, Aboulker, Jacob, Jacques and Gault).

Though our distinguished colleague, Thomas J. Harris, recorded the chief features of my own description in his excellent paper on "Atypical Mastoiditis" read before the meeting of the American Otological Society, Atlantic City, 1911, I thought it might not be totally destitute of interest if I summarized before you the few characteristic symptoms which enable us to recognize this particularly benign complication of middle-ear infection and to apply to it the not less benign treatment it requires; thus sparing our patients the useless opening of the bone.

I wish to record the two cases which by opposite routes gave me the clue to a right interpretation of the accidents in question.

Few otologists, I think, may boast, after some years of surgical practice, of never having opened a perfectly normal mastoid. Such had also been my lot perhaps more than once, when in the spring of 1900 I again failed to find the suspected pus in the mastoid of a young girl presenting such an ensemble of general and local symptoms to make the incident unforgetable.

The girl in question, 9 years of age, had been attacked on April 28, by an angina *a frigore*. Six days later, pain in the right ear. but moderate and not interfering with her sleep. After another lapse of three days, while no discharge had been noted from the ear nor any increase of the pain, there developed a diffuse swelling on the temporal region, moderately tender under pressure and accompanied by a slight edema of the upper eye-lid of the same side.

The family doctor consulted me about the meaning of that swelling. I first directed my attention towards the ear, where I noted but very slight anatomical and functional modifications; the hearing-power was but little lowered; the tympanic membrane showed some redness, but no bulging, and did not let any discharge escape after being opened. There was no appearance of furuncles in the meatus.

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*Read at the meeting of the Ninth International Otological Congress, Boston, Mass., August 14, 1912.

On May 8, the temporal swelling having increased gradually and extending to the mastoid region and as the very distinct fluctuation could not allow any doubt as to the presence of pus under the periost, it was decided to open the abscess under chloroform. The incision of the soft parts made along the insertion of the auricle down to the bone confirmed the diagnosis, while letting a teaspoonful of pus of creamy appearance escape.

Being still under the influence of the generally admitted views, namely, that any sub-periostal suppuration of otic origin means a coexistent intra-nasal suppuration and convinced that my operation would not have been complete had I not opened the mastoid antrum, I removed the cortical of the apophysis on all its extents, unwittingly denuding the sigmoid sinus that was situated abnormally far forward, but not finding any pus in the autrum nor in the region of the apex. Of course the child made a perfect recovery, which though was only obtained after three weeks of dressings.

This case awakened naturally in my mind the desire of avoiding in further similar circumstances, the bony part of the operation which could and ought to have been spared to the young patient with a more precise diagnosis. In consequence of a lucky coincidence, on May 15, while the child, whose case I have just been relating, was still under treatment, I was consulted by a man, 26 years old, for a swelling, the aspect and seat of which offered the greatest similarity to those noted in my first patient: in fact it was more supra- than retro-auricular and occupied a vast triangular surface of the temporal region, with its basis turned upwards, whilst its apex pointed to the soft parts covering the upper wall of its opening. As in the first case, the edema extended to the superior eyelid; there was hardly any fever, the patient's looks were excellent; no spontaneous pain preventing sleep: little tenderness of the swollen parts under pressure.

The patient gave the following history: a fortnight before, in consequence of a cold in the head, he had felt some pain in the other ear (the right one) which had subsided after the appearance of a moderate and transitory discharge from the meatus. Two days later the same symptoms had been noted on the left side. There the discharge only lasted a single day. After a lapse of four days the swelling had made its first appearance and had not ceased to increase since. As the swelling at the entrance of the meatus made the inspection of the tympanic membrane utterly impossible, I practiced an insufflation of air through the Eustachian tube by means of the catheter, and could detect some crepitus, which suppressed any doubt regarding the infection of the middle ear. On the other hand. the absence of the characteristic tenderness under pressure of the soft parts of the meatus was anything but favorable to the diagnosis of a furuncular eruption.

In order to settle my opinion in that respect, after duly anesthetizing the skin of that region by means of an injection of cocain. I performed a deep incision down to the bone, along the upper wall of the meatus, in consequence of which I obtained the spontaneous escape of very fluid pus, whose abundance greatly increased by pressing on the temporal swelling. With the help of a probe introduced through the incision I could feel plainly the bony surface denuded.

In spite of the experience acquired at the expense of the previous case I was still so much under the influence of the prevailing ideas that I hardly dared to expect the complete recovery of this second patient from such a limited incision of the soft parts. I resolved, notwithstanding, to stop there temporarily and to apply on the temporo-auricular region a wet dressing, after keeping the incision open by means of a small drain.

On the following day there was still some pus in the sub-periosteal cavity, which was again evacuated by pressure of the temporal region. The inside of the abscess was then touched with a piece of wadding soaked in iodin-glycerin. On May 19 all traces of the swelling had disappeared, and a few days later the little wound had thoroughly healed up.

The two cases I have just recorded were destined to be epoch-making in my practice, since I felt entitled to draw from them the conclusion, that some forms of sub-periosteal suppuration of otic origin can heal in consequence of the simple incision of the soft parts. The question was only to determine with as much precision as possible the clinical features on which such a diagnosis might be founded.

After personally observing some other similar cases and reading the description of several facts published by other authors, I propose to you the following comparative table, as representing the chief elements of differentiation between the sub-periosteal purulent collection consecutive to intra-mastoid suppuration and the sub-periosteal abscess independent on intra-osseous suppuration:

Sub Periosteal abscess accompanying mastoiditis.	*Sub-periosteal abscess independant on intra-osseous suppuration.*
Abundant and persistant otorrhea.	Slight and transitory otorrhea, having generally disappeared when the swelling occurs.
Retro-auricular swelling.	Rather supra-auricular swelling covering the greatest part of the temporal region and pointing inferiorly towards the upper wall of the meatus, whose soft parts are raised by the infiltration.
Mastoid region tender under ressure.	Generally little or no tenderness of the mastoid under pressure.
Deep spontaneous pain with throbbing sensation, preventing sleep.	Little or no spontaneous pain. No sleeplessness.
More or less high fever. Alteration of the face, with an expression of suffering.	Little or no fever. Good looks preserved.

I am conscious, of course, that such schemas with their appearance of absolutism are very far from corresponding to the essential variability of clinical facts. Their only pretension must then be to be representative of the majority of cases. Of this I cannot give a more illustrious instance than by recording my last case, which was published in the *Annales des Maladies de l'Oreille,* 1903, No. 10, p. 387, the subject of which had his nights disturbed by pains and a rather high degree of fever (38.9°), while the apex of his mastoid showed a marked tenderness under pressure. If, in that case, I did not proceed at once to opening the mastoid, it was only in order to grant a little respite to the young patient and to his parents, all three feeling most apprehensive of the mastoid operation, but I was fairly decided not to delay the mastoidectomy later than the following day in case the serious symptomatic ensemble had not subsided. I, therefore, limited my intervention to drawing the sub-periosteal pus through a long incision performed, under local anesthesia, along the upper wall of the meatus; and great was my surprise as well as my satisfaction, on the following day, on finding the patient fever- and painless, and on noting the complete disappearance of the tenderness of the mastoid apex.

Of all the elements of differential diagnosis previously enumerated I feel bound to propose, as the most reliable, the scantiness and transient character of the otorrhea and the fact that it has generally completely ceased when the temporal swelling first appears. I must also not omit to mention the fact, that, in the only case where the micro-biological examination of the pus of a very typical similar abscess was performed by my friend Jacques (of Nancy), the cultures showed in it the exclusive presence of the pneumococcus. Such an investigation ought to be renewed on all further occasions, since it might provide us with a new means of diagnosis.

The pathogeny of the sub-periosteal temporal abscess I have just described has been a subject of discussion among otologists. For my own part, I have always considered as the most probable and natural hypothesis, that the infecting germs, after penetrating into the tympanic cavity, pass directly under the mucous membrane of its roof unto the deep coating of the periost of the upper wall of the meatus, finding their natural way from one region to the other through the Rivinus' fissure, along the vascular elements emanating from the deep auricular artery. The absence of any intra-osseous suppuration and the continuity of the swelling all along the upper wall of the meatus and from there to the temporal region seems to retrace exactly the successive land-marks of the microbian migration. I found, furthermore, an unexpected support of this view in an article published by my two colleagues, Le Marc Hadour (of Paris) and Chauveau (of Geneva) in the July number of the *Annales des Maladies de l'Oreille,* under the title: "Periostites du conduit auditif externe au cours des otites suppurees," in which they show the tendency of the infection, in some cases of acute suppuration of the tympanic cavity, especially in children, to penetrate and progress under the periost of the upper wall of the meatus more or less far towards the temporal region.

Whatever may be the views held as to the mechanism of the development of such accidents, there can be no hesitation as regards the best treatment to oppose to them, which, even in the absence of a complete certitude about the integrity of the bone, ought to be *first* as simple as possible, that is to say, limited to the soft parts, since, in case of an error in that respect, the participation of the bone to the suppuration would soon be revealed to us by the persistance of the local and general symptoms, and we should then have full time to complete our first intervention by extending it to the mastoid cavities.

As regards the seat of the incision, I feel bound to advocate the one I adopted in my various cases: the soft parts covering the upper wall of the meatus, which on all my patients represented the lowest point of the purulent collection. We shall thus realize the best conditions for an uninterrupted escape of the pus, and it is the result of my own experience that, as a rule, patients show themselves less reluctant towards an incision to be dissimulated in the meatus than towards a retro-auricular one. The treatment should be completed by the introduction of a small drain through the opening and by a large and thick wet bandage.

By behaving in the proposed way we shall be conscious of sparing our patients any operative act not absolutely requested; and even if we should be induced later on, by the persistence of the symptoms, to open the bone, they will be much more ready to give us their assent to a more complete operation, since we shall have proved our desire to spare them.

GLIO-SARCOMA OF THE LEFT LOBE OF THE CEREBELLUM, GIVING EXTERNAL SYMPTOMS OF MASTOIDITIS. REPORT OF A CASE.*

DR. JAMES F. MC CAW, WATERTOWN, N. Y.

Mrs. G. O., age, 31 years, seen in consultation September 3, 1912. Family history: Father and mother both living and in good health. One sister living and healthy.

Personal history: Has never been robust and has suffered from sick headaches since early childhood. For several years these attacks have been getting more frequent with increasing severity accompanied by nausea and vomiting, this condition lasting continuous for several days. For six months she has been losing flesh and strength and feels nauseated the greater part of the time, but able to attend to her household duties. Two months ago she contracted a severe head cold which was followed by very sharp earache on the left side which lasted several days, but with no discharge from the canal. This was followed in a few more days by "neuralgic pain" back of the left ear. This pain has continued with only slight intermissions ever since, and for four or five days has been so severe that sleep was impossible except under opiate. Has been very much nauseated and vomiting at short intervals for two days continuously, these attacks being aggravated by the increase in the severity of the paroxysm of pain in the top and left side of head.

With the development of pain over the left mastoid there appeared attacks of vertigo so severe at times as to compel her to take the recumbent position. For the past four days these vertiginous attacks together with the pain, nausea and vomiting had become so frequent and severe that she was compelled to remain in bed. Three days before I saw her there appeared a soft swelling behind the left ear.

Examination: Patient somewhat emaciated, anemic with a very decided salor complexion and an expression of suffering; the auditory canal clear, membrana tympani lusterless and slightly retracted; hearing good. There was some edema over the entire mastoid region; at the posterior margin at about the location of the emissary vein, there was a smooth fluctuating tumor about an inch in diameter, exquisitely sensitive to pressure. Much manipulation of this mass would produce a sensation of nausea. Upon deep pressure there was decided tenderness over the entire mastoid area, the sensitiveness increasing as the fluctuating tumor was approached. There was no evidence of muscular twitchings or paralysis, sensation so far as could be determined was normal, mobility of the eyes perfect and pupillary reaction negative. The eye grounds showed a slightly choked disc in each; and distributed over the fundus of each eye were small, flame-shaped hemorrhages; sight distinctly blurred, the exact degree, however, was not determined. Temperature, 99° F., pulse, 72, respiration, 18.

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*Read at the meeting of the American Laryngological, Rhinological and Otological Society, Washington, D. C., May 9, 1913.

At this time we could not satisfactorily interpret the symptoms and the objective findings. The writer was convinced, however, that there was some intra-cranial involvement, the nature of which was in doubt from the fact that there was a history of middle-ear trouble two months previously with gradual development of mastoid involvement and the appearance of a fluctuating tumor over the same area. The symptoms, however, were sufficiently urgent to warrant an exploration. She was sent to the hospital and I operated upon her the next morning.

The usual mastoid incision was made and another beginning at about the middle of the original incision and extending downward and backward into the fluctuating tumor above described, which was found to be composed of necrosed tissue, blood-clots and dark grumous fluid blood. The flaps were then elevated, the antrum entered and found normal. The external table of the mastoid was then chiseled away, which revealed an exceedingly pneumatic process, each cell very large, prominently outlined and filled with dark thick blood, the membranous lining of each cell was decidedly thickened and velvety-looking, being infiltrated and colored by the same bloody material. No pus was found. This entire area was curretted away and as the sigmoid sinus was approached it was found exposed by a necrosis of the inner table beginning above the knee and extending downward for about one and a half inches; this necrosis also extended downward and backward from the sinus, exposing a large area of thickened dura. Just below and behind the knee there was a necrotic opening in the dura filled with a firm blood clot, directly connected with the tumor noticed externally. All clots were carefully removed and a sub-dural exploration made which revealed a large bleeding mass. The hemorrhage was so severe that it was thought wise to defer further operative work at this time. The wound was cleansed and packed tightly with iodoform gauze and a compression bandage applied. The patient reacted nicely and next morning said that her head felt clearer than it had for months.

For two days there was a great quantity of bloody oozing, so that the dressings had to be reinforced several times. The first dressing was done on the third day and every second day thereafter. At each dressing it was evident that the clot projecting through the dural opening was getting larger and firmer with more resistance below the dura; but as her symptoms were all relieved and she seemed to be making such favorable progress, it was thought wise not to explore further. However, all of her old symptoms began to reappear at the end of three weeks, so that it was impossible for her to retain nourishment.

On September 29 I again operated upon her; this time cutting away the bone below and posterior to the sigmoid thoroughly exposing the cerebellar fossa; the dura which was very thick was freely incised over this area. Terrific hemorrhage ensued and the tumor, 2½ inches by 1½, which I here show you, presented in the dural opening. My finger was quickly passed around it and delivered it from its bed. It occupied the anterior part of the left lobe of the cerebellum. The cavity had to be rapidly packed to control the hemorrhage; so no detailed examination of it could be made. The patient suffered greatly from shock and hemorrhage, but under the usual treatment rallied nicely in about forty-eight hours. All pain, nausea, vomiting and vertigo were relieved by the removal of the growth, but when she left the hospital twenty-eight days later, there was a cerebellar hernia and the evidence of a return of the growth at the anterior part of the wound. This patient went back to her home in Canada and died about two months later.

PATHOLOGIST'S REPORT.

"Examination of fungating growth from behind ear of Mrs. G. O. Portion brought consisted of the fungating part of tumor protruding through skull over lateral cerebellar region. The surface of this mass was full of bone spicules, while deeper parts were markedly hemorrhagic with strands of lighter tissues running through same. Sections were made in different portions of growth. The deeper parts showed structure of glioma with much hemorrhage and zones of inflammation. Towards the surface the cellular elements of bone (osteoblasts and osteoclasts) were abundant and actively prolifering and there were areas, both of new bone-formation and of bone-absorption. On the surface newly-formed bone was abundant with large narrow spaces. No doubt the primary condition was glioma (gliosarcoma) which in fungating through the operation wound sharply stimulated the bone cells to growth, etc.

W. T. CONNEL, Kingston, Ont.

Examination of the original growth gave the same general findings and diagnosis.

Aside from the interest which this case possesses as a brain tumor, there are several unusual features in connection with it which I think should interest us as otologists. Here was a case giving a history of ear-trouble two months before with the gradual development of a mastoid involvement, with all the external symptoms positive, accompanied by unmistakable evidence of intra-cranial pressure and still the findings at the time of operation showed the ear and antrum negative. Such a coincidence in history and symptom-development in a less pronounced case might be very misleading. Such a coincidence of circumstances must be exceedingly rare.

The wide-spread blood extravasation involving all the mastoid cells and the formation of an hematoma below the periosteum resulting from extensive necrosis of both cranial tables, due to the extreme intra-cranial pressure, the source of the bleeding being subdural, which was demonstrated at the first operation when the clot was traced from the sub-periosteal hematoma into the mastoid cells and through the dural opening must be a rather unusual condition.

The position of the tumor in the lower anterior and outer part of the cerebellar fossa, would, I think, in a measure explain the great tendency to bleeding. As the tumor developed it certainly produced increasing pressure on the sigmoid sinus just above the bulb, which no doubt interfered with the return circulation and therefore a factor in the greater tendency to extreme hemorrhage.

When we consider the widespread destructive changes that must have been going on for a long time, it is most surprising that definite symptoms of intra-cranial involvement were not sooner developed.

Bank and Loan Building.

Enucleation of Tonsils and Removal of Adenoids Under Gas Anesthesia. J. F. O'Malley. *Brit. Med Jour.,* April 5, 1913, p. 699.

The author employs the Sluder method with slight modifications. Adenoids are removed in about 15 seconds and a tonsil in from 4 to 5 seconds. In addition to the usual preparations for general anesthesia O'Malley administers one day prior to operation and for six days after, a mixture of sodii salicyl, potass. bicarb., potass, chlor. (aa gr. x), elixir aromat B. P. C. (m. xx) and ag. chlorof (fl. oz. jss.).

Ed.

THE USE OF GAUZE PACKING IN THE EAR CANAL.*

DR. MARK D. STEVENSON, AKRON, OHIO.

Small tufts of cotton rolled into a small ball are usually employed in the outer ear-canal when any discharge is present. This serves to protect the ear from the wind, from the entrance of foreign bodies, insects, infections, etc., but instead of readily absorbing the discharges it dams them back into the ear, preventing their free escape. For use in discharging ears, gauze is much to be preferred, making a good protector against external infection and much more readily absorbing the discharges. As soon as the gauze becomes saturated the piece used may be discarded and another piece employed. Gauze has not been used so much for this purpose as cotton because proper-sized sterile pieces of it have not been so readily obtainable. A quantity of the gauze may be secured sterile, but in its use by the patient after opening the package it is very likely to be contaminated by careless handling of the whole, by frequent exposure to dirt, as on a table, by the use of unclean scissors or the storage of proper-sized pieces in an unclean container. Clean scissors are not always available to cut a quantity of gauze into proper-sized pieces.

Realizing the great advantages in securing free drainage from the ear which I pointed out in a paper, "The Use of Cylindrical Gauze and Cotton Drains in Discharging Ears," *Jour. A. M. A.*, January 28, 1911, I had printed instructions prepared as to the proper use of gauze, which I gave to certain patients. However, as it is impossible to have the layman thoroughly understand and carry into effect instructions in regard to exact cleanliness, I have had proper-sized pieces of gauze prepared in quantities so that one at a time can be used without contaminating the remainder. The pieces of gauze consist of strips of selvedge edge gauze about one inch wide and 2 inches long. They are placed in a small paper box container in which paper in a long strip forms the partitions between the separate pieces of gauze. On pulling out the paper, one piece of sterile gauze at a time can be secured.

The following simple directions as to use are placed on or in each package so that any layman can intelligently and safely use them:

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*Presented at the seventeenth annual meeting of the American Academy of Ophthalmology and Oto-Laryngology, Niagara Falls, August, 1912.

"This gauze is intended for use in the ear for absorbing discharges. It is intended that as soon as the gauze becomes soiled that the piece shall be destroyed and a new piece employed. This is necessary to preserve sterility and cleanliness of the dressing. The directions should be strictly carried out."

DIRECTIONS.

Always keep the lid of the box closed except when necessary to take out a strip of gauze. Lift only enough paper up to secure one piece of gauze at a time. Never touch the remaining pieces of gauze with the hands, nor permit the entrance of dust, liquids or anything else into the contents of the box. The fingers should be thoroughly cleansed by washing with soap and water before removing or handling the gauze.

The piece of gauze, if possible, should be rolled up and immediately placed as directed by the surgeon. It should never be laid on a table or elsewhere before use.

Short thin pieces of packing with selvedge edges, thus always readily obtainable, may be employed in many ways, e. g., in a nostril, in packing any small wound or by having patients change the dressings by simply changing the gauze and fastening it in place by a little collodion or by adhesive strips. One or several pieces may be used.

165 East Market Street.

Certain Dangers of Adenoide c W. E. Grove, *Bull. Johns Hopkins Hosp.*, April, 1913.

The two chief dangers Grove classifies as post-operative bleeding of which eleven fatal cases are recorded in the literature, and post-operative infection. Under the latter head the author considers fever, general sepsis, endocarditis, acute rheumatic fever, acute infectious diseases of childhood, tonsillitis, adenitis, torticollis, lung infection and meningitis. In two of his own cases infection of the accessory sinuses followed the operation. Grove felt that this procedure is neither simple nor harmless but should be undertaken in a hospital and the cases watched post-operatively.

Ed.

REPORT OF THE COMMITTEE APPOINTED BY AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY TO CONSIDER THE BEST METHODS TO BE FOLLOWED IN THE TEACHING OF OTO-LARYNGOLOGY IN UNDER-GRADUATE AND POST-GRADUATE SCHOOLS.

Dr. D. J. Gibb Wishart, Toronto; Dr. S. MacCuen Smith, Philadelphia and Dr. Chas. W. Richardson, Philadelphia.

The subject assigned to our deliberation naturally divides itself into two distinct parts, and yet in the final analysis, the post-graduate teaching is closely dependent upon the thoroughness of the undergraduate work:

1. THE TEACHING OF OTO-LARYNGOLOGY TO UNDERGRADUATES.

In order to ascertain what methods are followed and what views are held in the various leading universities of this continent upon this question your committee submitted a series of questions to the Professors of Oto-Laryngology in forty of the leading institutions, the list of these being compiled from the Carnegie Foundation Bulletin No. 4, entitled "Medical Education in the United States and Canada."

These questions were as follows: 1. Should the "course of instruction" be extended over one or two years? 2. How many hours should be devoted to this "course of instruction?" 3. What proportion should be clinical and what didactic? 4. In what order should these be given? 5. What should be the limits of such a "course of instruction" having in view the necessities of the general practitioner, and the proper balance of the subjects of a medical curriculum? 6. Should "operations" form part of such a "course of instruction." 7. Should a separate examination in oto-laryngology form an integral part of the final examination?

Replies were obtained from some thirty-one institutions, including over twenty states and provinces, so that the opinion elicited may be considered fairly representative. In perusing these reports, your committee was agreeably surprised to find so little divergence in either practice or opinion as the replies revealed, and has, therefore, the greater confidence in submitting the resolutions which form their conclusions.

We regret that we were unable to elicit satisfactory information as to the amount of "individual instruction" given to each student. Where the number in the classes are considerable, (and if possible that number should never exceed six students), as Mygind[1] points out "the student is apt to acquire superficiality in the examination of the patient;" this fault is undoubtedly in many cases due to the teacher not having sufficient time to take each pupil individually and teach him all the details he should observe."

N. B.—In answering the above questions, which are intended to ascertain the personal views of those responsible for oto-laryngology in the leading medical colleges of the United States and Canada, it is desirable to indicate briefly also to what extent these personal views are carried out in the institutions with which the writer is connected.

We note also that the idea still lingers in the minds of some of our leading instructors, that didactic lectures form an adequate means of instruction. About one-fourth of those reporting asked for equality between didactic and clinical instruction. Surely this cannot be right. The regions involved in oto-laryngology are such as lend themselves least readily to demonstration by lectures, or even by lecture-clinics. It is only in so far as the student receives "individual instruction" on the living subject that he can acquire an adequate knowledge of his subject in the limited time which can be spared in the overcrowded medical curriculum.

This "individual instruction" requires time, patience and competent assistants, but these are well worth the expense involved, as by properly instructing the student of medicine in oto-laryngology we will do much to avoid the conditions which now lead to the foisting of vast numbers of what we may style pseudo-specialists upon the public. To quote Mygind[2] again "a few cases examined and followed thoroughly teach the student to observe, and give him better experience than a great number of cases examined superficially."

'Individual instruction" as pointed out above demands competent assistant instructors, but the governing boards of our universities must be compelled to realize the absolute necessity which exists for the proper balancing of the medical curriculum, so as to turn out all-round general practitioners and must provide the equipment therefor.

Another point which your committee deem worthy of criticism in dealing with these reports is the scope of the instruction with regard to text-books. Such a course should get as far away from the text-book as possible. We cannot in the least agree with the gentleman who reported in answer to question five, "that the contents of the required text-book on these subjects should be covered, *chiefly by recitations*." (Note the italics). The student should be led to read up the cases he sees in one of the many excellent text-books which are at his command, but to cover a text-book by recitation is simply a waste of time, and must lead to superficiality.

Every student of medicine has a right to be graduated primarily as a general practitioner. The first task of every general practitioner is diagnosis. No amount of text-book recitation will develop the ability to diagnose correctly in oto-laryngology, unless there go beforehand the visual knowledge of the normal as contrasted with the abnormal, the education of the eyes, ears and fingers. This education means actual work upon the patient and the "course of instruction" should therefore be almost wholly clinical.

As regards the order in which instruction should be given, some of the teachers feel strongly that any didactic instruction should be given as the finale, to enable the student to co-ordinate his observations and place them in related groups.

By question five we hoped to elicit a sufficient answer to a difficult problem. With the daily advance of medical science, new subjects are with loud voices demanding admission to an already overburdened course, and even in those universities where the course is one of five years, it is being found needful to relegate some of the science subjects to the preparatory course, so as to give the student time to digest what he sees daily in the wards.

The best of judgment is, therefore, called for in determining what shall form a part of the minimum curriculum in medicine.

On the other hand as Gradenigo[3] has pointed out, "What doctors need in their daily practice should be made compulsory, without expecting them to be familiar with complicated examinations and operations." This states in a nutshell what should be included in the "course of instruction" in oto-laryngology. The student should, therefore, be made thoroughly familiar with the anatomy, be taught the use of the instruments of examination, be able to recognize the normal parts, be familiar with their appearance in the acute inflammations and in the commoner chronic affections, and finally be able to recognize and understand the principles of treatment of the acute affections.

With this information in his possession he will have a solid foundation upon which to build his superstructure, will be able to read his text-book in connection with a given case intelligently, obtain a comprehensive knowledge of the condition of the various organs of his patient, and finally be in a position to secure early and useful assistance from the specialist. Inability to examine a larynx has often led to a failure to recognize malignant disease in its incipient stages, and many examples will occur to all of us, where the lack of training of the student has been to the great suffering of his patient and the disgrace of the practitioner. Such a course will, however, not be complete without instruction from his professor as to what symptoms demand the skill of the specialist, and the unwisdom and criminality of failure to refer the case for examination to the thoroughly trained specialist, when such symptoms arise. The question regarding operations was intended to raise the point that except where emergency aid is required as in myringotomy, intubation and tracheotomy, the general practitioner should not undertake even the removal of tonsils, because every operative procedure in oto-laryngology is attended by risks which call for special training and special skill. The student has a right, however, to understand the way in which the condition of the patient may be improved by skilled operative procedure.

The last question elicited practically unanimous replies that a separate examination conducted by the professor of oto-laryngology should form an integral part of the final examination. The association of a question or two on the ear, or throat, upon the paper in surgery must be relegated to the past.

Your committee, therefore, beg to recommend for your adoption the following as the minimum requirements of the undergraduate course in oto-laryngology:

1. That each student of medicine be entitled to receive sufficient instruction in oto-laryngology to enable him to deal with the parts concerned as intelligently as with the rest of the human body.

2. That for this purpose he should be familiar with the anatomy of the parts, possess a practical working-knowledge of the simpler instruments of examination, be able to recognize familiarly the normal appearance

of the structures, be practically acquainted with the pictures presented by the acute inflammations, and the commoner diseases of the organs involved and how to treat the same. He should further be instructed to recognize the symptoms of serious complications, the wisdom of early associating the greater knowledge of the specialist in the care of his patient, and the dangers associated with all operations upon the parts involved, except in the hands of the competently trained specialist.

3. That for this "course of instruction" a share of each of the two final years of the medical curriculum be essential.

4. That the said "course of instruction" should embrace both clinical and didactic teaching, preferably intermingled, the clinical to be greatly in excess of the didactic, at least in the proportion of three to one.

5. That clinical instruction be given to small groups of students preferably in classes of six, each receiving individual instruction, and this together with the didactic work should extend over a period of at least forty hours in the time of each student in each of the two years.

6. That operations should not form any part of the above course, except that in so far as may be possible each student should be permitted to assist at the performance of the simpler varieties, that he may become practically acquainted with the methods of procedure and the objects sought.

7. That a special separate examination in oto-laryngology, preferably clinical, conducted by the professor of oto-laryngology, form a part of the final examination in medicine of every university, and every licensing body.

8. That a copy of these resolutions be forwarded to the medical faculty of every university and college of medicine, as well as to every state or provincial examining board, in the United States and Canada.

THE TEACHING OF OTO-LARYNGOLOGY TO POST-GRADUATES.

The second part of our report concerns post-graduate instruction in oto-laryngology, and while the former was aimed at the production of the well-rounded general practitioner, this must endeavor to achieve the evolution of the scientific specialist.

The subject is much to the fore on this continent and elsewhere. Last year the *Journal of Laryngology, Rhinology and Otology*, published an able series of articles upon the education of the specialist in throat, nose and ear disease, in Denmark, Germany, Italy, Austra-Hungary and France. In Britain it formed a topic of general discussion at the Liverpool Meeting of the British Medical Association. On this continent, it has led to the publication of recent papers by Schambaugh,[4] Ellett,[5] Cragin[6] and others, and formed the basis of an interesting discussion before this Society two years ago, a discussion which led to the formation of the committee now reporting. A pronouncement by this important organization will therefore be quite apropos at this serious juncture, for we must not forget that with privilege comes responsibility, and this Society, whose membership is so extensive, and whose influence so widespread, should—*noblesse oblige*—lead, not follow, in the making of an intelligent public opinion.

In opening the discussion of the question before the British Medical Association, Mygind[7] of Copenhagen, stated that: "Although there is no regular system of education of the specialist in oto-laryngology in Germany or Austria, we may divide the practical education into three stages through which the specialist generally passes both in these two countries and in most other continental countries.

"First stage: the preliminary education which each student receives at the university. It is compulsory in most continental countries, and extends over a period of one term.

"Second stage: represented by the education which many future specialists receive, after having left the university, at one of the numerous post-graduate courses which nearly every university, and many hospitals, offer, and which are given either by professors, or by privat-docents attached to the university. In Austria they are, according to Frey, divided into six different kinds: (A) Clinical diagnosis and treatment. (B) Functional tests. (C) Bedside work. (D) Surgical practice on the cadaver. (E) Practical treatment and minor operations in out-patient department. (F) Demonstrations and lectures on normal and pathological anatomy, histology and physiology, to which quite lately has been added. (G) Pathology and diagnosis of labyrinthine diseases.

"Third stage: the education the future specialist receives as assistant at a special clinic attached generally to a university or to a general hospital.

"The third stage is undoubtedly the backbone of the whole education of the specialist, and it is only a rare exception that a medical man on the continent, nowadays, is universally recognized as a specialist without having been for some time assistant at a public clinic. In Germany and Austria, and also in some other continental countries, so much stress is laid upon this part of the education that one often meets specialists of considerable scientific reputation remaining for a considerable number of years assistants at a special clinic, in order to stand a good chance when a chair in oto-laryngology is vacant at a university. After having been appointed an assistant for a considerable period at a special clinic, and after having given proofs of scientific ability— in Germany an officially approved dissertation must be printed—the specialist may have in Germany, Austria and Italy, the title of privat-docent conferred upon him by the university. This gives him the right of teaching in the university and enrolls him in that high, but no means numerous class of specialists from whom the professors are chosen."

Up to the present, on this continent, there is no recognized portal to the speciality. On the other hand the gates may be said to be many, and yet, *mirabile dictu*, our towns and villages and even our cities are filled with "specialists" who have entered by no gate whatever, but have simply "climbed over the wall" and are to some extent, at least, to be considered merely as "thieves and robbers."

The house-surgeon attached for three months to the oto-laryngological service of a hospital, the general practitioner who derives his knowledge of the subject from a six weeks' course in a post-graduate school, and the man who takes a run to Europe immediately after graduation, alike think themselves worthy to be ranked as specialists.

As long ago as 1892, Osler[8] pointed out that there is "serious danger in the attempt to manufacture rapidly a highly complex structure from ill-seasoned material."

As Schambaugh[9] says: "There is a deplorable lack of proper standards in medical education, and the specialities of the eye, ear, nose and throat have had to carry a disproportionate share of these ill-trained practitioners."

Again as Amberg[10] so clearly puts it: "From the standpoint of a well regulated and governed community, it represents anarchy, and anarchy is the absence of government, the state of society in which there is no supreme power."

It is time we had done with this farcical sort of preparation, if our specialty, worthy as it is of the best, is not to be dragged in the mire as a result of the ignorance of anatomy, diagnosis, and technic displayed by a very large proportion of the rank and file of those who now style themselves "specialists in diseases of the ear, nose and throat."

We all know the facts, and we deplore them. Now what can be done to face and overcome the difficulties of the situation? We must first decide what constitutes the standard of proper training, then provide for its acquirement, and finally bring such influence to bear upon state legislatures as to secure the legal enactment that only specialists provided with this training may practice as such.

Those who have written upon this subject are agreed that not less than two years should be devoted to preparation for practice as a specialist, this should, however, be preceded by one or more years spent in general practice, or better as house-man in the medical and surgical services of a good hospital, at least half the time being devoted to surgery. The specialist course itself must embrace highly specialized studies in the anatomy, physiology, embryology, pathology, physics and therapeutics, which bear upon the subject, operations on the cadaver, etc.

The time required for this course will occupy at least six months. In addition the candidates must subsequently serve as resident assistants in a special hospital or in a similar position in the special service of a large general hospital, for a period of not less than eighteen months, and to provide sufficiency of experience the special clinic should work daily and should have at least fifteen beds assigned to its use. In this connection it is well to insist that during the last six months of his service, the candidate shall act as a senior assistant in the major operations, and personally perform those less important.

Where shall such training be provided? Without doubt the scientific part must be placed solely under the control of the universities, for these are the proper bodies to provide post-graduate instruction. In as much as the universities are amenable to the public opinion of such bodies as our own, and as they stand for increasingly higher ideals, there is a guarantee that the instruction provided would be thoroughly scientific and comprehensive.

Not every university could at present undertake such post-graduate instruction, but a few judiciously selected centers could be found even now, where such courses as we suggest could be given.

With regard to the hospital training of the candidates we are not so limited. Several first-class special hospitals exist, whose housemen are in demand by institutions which cannot now train their specialist juniors. The terms of services in these special hospitals are, so far as we know, never less than eighteen months.

In the special services of the larger general hospitals it is becoming increasingly common for the house surgeon in oto-laryngology to be obliged to serve for eighteen months, to confine himself to these subjects only, and to be selected from applicants who have been several years out of college and who have decided to devote their future to oto-laryngology.

It would not be difficult to draw up a schedule of the requirements which such institutions must fulfill if their certificates of services rendered are to count in the qualifying of candidates.

It would not be necessary to confine the candidate to such positions as he could find on this continent, and in any event there might easily be arranged provision for the candidate pursuing further study in Europe.

To add a fitting coping stone to the structure whose erection we are considering, the candidate should finally be compelled to present himself to one of the universities supplying the post-graduate instruction indicated above for examination on the work embraced in the entire course, and the successful candidate should be given a degree—that of Ph. D. (oto-laryngology) has been suggested in various quarters.

In sketching the above course we have drawn nothing fanciful, for at the present time every man who is desirous of placing himself at the top of the ladder in our specialty, in one way or another pursues such a course of study, but often finds with regret that he has not been wisely advised in his choice of work and places to work in, and there is no arrangement for the examination anywhere, except that indicated in the above quotation from Mygind, viz. in Germany.

The final step, that of securing legislative measures, would of necessity be difficult to attain, but public opinion will ere long demand that we be protected from the incompetent specialist, as we are now from the ill-trained dentist.

The program sketched above takes no account of the post-graduate school as at present organized, nor need it do so. The case against the present condition in post-graduate teaching has been ably stated by Birkett,[11] and need not be repeated here.

By no reconstruction which we know could we hope to secure any control of institutions which are simply after all incorporated for the purpose of dividends. They came into existence to fill a need produced by the poor character of the instruction in general medicine given by many of the schools of medicine, many of which were themselves proprietary, and as Schambaugh has already said: "when the undergraduate instruction in medicine has been thoroughly done, the elementary work in the specialities will not require the subsequent patching, which is all thát the existing post-graduate school are prepared to do." The Carnegie report has already effected a marvelous change through the public opinion its revelations have aroused, and the proprietary school is doomed.

With regard to post-graduate teaching in oto-laryngology your committee beg to recommend.

1. That the time has arrived to standardize the degree of scientific attainment, and of clinical training, which shall qualify those who wish to begin the practice of oto-laryngology as a specialty.

2. That the report of this committee now submitted forms a suitable basis for such a standardization.

3. That a committee representing this Society be appointed to work out the details.

4. That the other important associations of oto-laryngologists on this continent, viz: The American Laryngological Society, The American Otological Society, The American Medical Association and the American Academy of Ophthalmology and Oto-Laryngology, be and are hereby invited to appoint representatives to act with the above-named committee from this Society, so that the action finally taken shall represent to the fullest extent the consensus of opinion of American and Canadian oto-laryngology.

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Diathermia in Treatment of Deafness from Middle-ear Disease.

HAMM, *Deut. med. Wchnschr.*, July 10, 1913.

Otothermia is of great value in the therapy of chronic diseases of the drum membrane and chronic, non-suppurative middle-ear catarrh; it is effective in combatting defective hearing following middle-ear suppuration, even when operative interference is necessary; in some cases of otosclerosis simple or combined otothermia produced improvement. ED.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular Meeting, March 26, 1913.

JOHN F. MCCOY, CHAIRMAN.

Fibro-myxoma of the Naso-pharynx. (Presentation of Specimen.) DR. GERHARD H. COCKS.

The term true fibroma of the naso-pharynx is applied to tumors whose point of origin is in the naso-pharynx, in contra-distinction to false fibromyxomata, which originate in the nose by a pedicle and fall back into the naso-pharynx as they increase in size.

This tumor is a pedunculated growth of the fibromatous type. Its point of origin was a pedicle growing from the anterior cushion of the right Eustachian tube. The dimensions of the growth are:—length, 1½ inches; height, 1⅛ inches; thickness, ¾ of an inch. It is irregular in outline.

The history of the patient is as follows: Mrs. A. M., 23 years old, came to my office on January 7, 1913, complaining of obstructed nasal breathing and a peculiar nasal twang to the voice for the past ten or twelve years. Since last summer her symptoms became worse.

The left nostril was completely blocked during both inspiration and expiration. The right nostril was only obstructed when breathing out through the nose. She has been subject to colds, sore throat, and stiff neck, especially last winter. She has also suffered from headache across the bridge of the nose, and in the occipital region. These headaches disappeared after operation.

Anterior rhinoscopy disclosed a post-nasal mass, visible through the left nostril. With the post-nasal mirror, the tumor could be seen completely filling the post-nasal space. The outline of the tumor was smooth and round. To the examining finger it felt firm (like a fibroma).

On January 9, 1913, the growth was removed under cocain anesthesia, though with considerable difficulty. Repeated unsuccessful attempts were made to extract the tumor by passing a snare through the left nostril with the finger in the patient's mouth. I finally succeeded, with the finger introduced through the mouth, in pressing the tumor firmly against the roof of the naso-pharynx, where it was grasped with a Brandigee forceps and removed with but slight bleeding. The difficulty in removing the tumor through the mouth was due to the ease with which it slipped about in the naso-pharynx. As soon as the finger or instrument was introduced through the mouth into the post-nasal space, the tumor moved forward into the choanal openings, partly filling them, thus allowing the Brandigee forceps to pass upward behind the growth toward the roof of the naso-pharynx.

The unsual features in connection with this case are: (1) the point of origin of the tumor; (2) the scant hemorrhage experienced when the tumor was removed; (3) the difficulty experienced in extracting the growth.

DISCUSSION.

Dr. Smith said that from the appearance of the growth and the constriction around its pedicle one might reasonably conclude it would have disappeared by the fibrous constriction around the pedicle shutting off the blood-supply to the tumor; that these fibromata springing from the naso-pharynx were a very much more serious proposition than those arising in the nose and extending into the naso-pharynx; those which originated in the nose were more polypoid in character, are bottle-shaped and are usually attached by a pedicle in the neighborhood of the middle turbinate. This class can be very easily removed with the snare. He then exhibited a picture of one which he had recently removed from the nose of a little girl. In this case the fibrous elements were more extensive in the extremity of the tumor than in its attachment. In inoperable cases of naso-fibromata the subcutaneous injection of monochloracetic acid beginning with 2 minims and running up to 5 minims, injected at varying intervals would occasion the disappearance of the fibromata. He had employed this method in three cases with uniform success and was acquainted with other instances where it had been equally effective.

Dr. Smith, in replying to Dr. Quinlan's criticism said that the sloughing took place within the tumor and not upon its surface and that no harm had ever resulted from the injection of these tumors. It was a greater danger to the Eustachian tube to operate as extensively as the fibromata required than to create the small amount of sloughing incident to the hypodermic injection of monochloracetic acid.

Dr. Quinlan asked Dr. Smith if the injection of the monohcloracetic acid brings on superficial sloughing or deep contraction, and on receiving an affirmative reply, said that he was inclined to consider it an unsurgical procedure to remove a growth in that way in the naso-pharynx and to allow the sloughing mass to remain in contact with the Eustachian tube, as it would seem to be a direct menace to the accessory cavities and middle-ear. He would very much prefer excision for the removal of any such masses. Any material which produces a slough is liable to be disastrous sooner or later, and might develop all kinds of trouble in this vicinity.

Dr. Yankauer said that it would seem that some assistance might have been obtained in getting the snare around the growth by using the naso-pharyngeal speculum.

Another method is that employed by Dr. Beck in his adenoid operations. It consists of putting a rubber tube or cord through the nose, bringing the ends out of the mouth and drawing up the ends. This elevates the palate so that most of the naso-pharynx is brought into view. It must be done under general anesthesia.

Dr. Glogau said that Dr. Cocks had mentioned the difficulty in removing the growth, and cited a case in which the patient was very sensitive and the growth was removed by means of an adenoid curette.

Dr. Carter asked whether Dr. Smith would advise the use of monochloracetic acid in the case reported by Dr. Cocks. Dr. Smith said that it was not necessary to employ it in a pedunculated tumor which could be removed by a snare or the galvano-cautery. The time required for shrinkage by monochloracetic acid and the slow disappearance of the tumor justifies its employment only in inoperable cases.

Dr. MacPherson said that a few years ago, acting on the suggestion of Dr. Jonathan Wright, and using Dr. Smith's syringe, he had treated two cases with monochloracetic acid. There was no external sloughing of the tumors, but they gradually contracted and disappeared without recurrence so far as he knew. The method was preferable to the use of the snare or forceps, as by their use the field of operation was dirty and the growths recurred.

Dr. MacKenty told of two cases under his care which he had so treated at Dr. Smith's suggestion. The cases were absolutely inoperable. No sloughing appeared, but the part turned white under the point of injection. Both cases resulted very satisfactorily, and there was no ill effect from the use of the monochloracetic acid.

Dr. Myles said that in recent years he had not seen many cases of those enormous fibromata and angio-fibromata of the rhino-pharynx which were formerly seen so frequently. Such cases had proved very difficult to treat. In certain cases he and the associated general surgeons had been accustomed to split the soft palate to gain access to the tumor. In other cases they had removed a part of the antrum wall and malar bone. The hemorrhage was frequently very excessive. All of these cases have a tendency to disappear after the age of 22 or 23, but while the growth by pressure is destroying the parts and causing great distress, he would be inclined to try this treatment, if nothing better can be done.

Closed Empyema of Ethmoidal Labyrinth Unrecognized for Several Years, Due to Closure of Anterior Naris. Dr. Wolff Freudenthal.

The patient, a middle-aged woman, applied for treatment several years ago, suffering with a sort of eczema at the introitus of the nose. The right naris was almost blocked by a peculiar eruption, which was accompanied by a watery discharge. There was considerable doubt as to what the condition was; Wassermann was negative, and examination of the tissue by the microscope revealed nothing. The mucous membrane was curetted and cauterized, but the condition always returned. There was some hardening of the ala nasi, which suggested rhinoscleroma, but examination for this also proved negative. Several dermatologists were consulted, but no one could give any clue to what the condition was. This continued for more than two years. One day the patient came in complaining of severe headache, and some edema over the right eye. She had never complained in that way before. An x-ray picture was taken, which showed a shadow over the right frontal sinus and ethmoid region. The next day this was operated upon and granulations were found in the frontal sinus, but no pus. When the ethmoid cells were opened a quantity of foul-smelling pus was evacuated, and it was evident that the condition was a closed empyema which had probably existed for many years. There was no indication of affection of any of the other sinuses and the external wound was closed. The case went on very well for a while and the patient was about to be discharged when she suddenly developed erysipelas. Every precaution had been observed, there had been no case of erysipelas in the hospital for several years, and the appearance of the erysipelas could not be explained. The patient finally recovered entirely, and a few weeks ago was presented with some other cases before a private society, with the statement that this attack of erysipelas could not be accounted for. A dermatologist happened to be present who had previously treated her for a folliculitis of the hands, which was infectious, and it came out that she was not very careful in her personal habits and wiped her nose with her hand. When the sinus was opened up this infectious folliculitis was conveyed to the wound and spread, the erysipelas continuing for five or six days. After that she went home, but returned to the hospital within two weeks. The same folliculitis was all over her face now, having spread from one side to the other. Drainage has been instituted from below and the wound will probably heal completely in a short time.

In reply to a query as to whether there was not an opening in the right nostril, Dr. Freudenthal said that there was a better one than there had been before.

DISCUSSION.

DR. MACKENTY asked if the patient had been put upon specific treatment. In spite of the fact that the Wassermann was negative, the case looked very suspicious of specific disease. Then again, might not the folliculitis of the nose be due to the chronic sinusitis. He also asked whether Dr. Freudenthal knew at the beginning that there was any sinusitis, or whether that question came up after the folliculitis of the nose.

DR. MCCOY asked whether Dr. Freudenthal thought that the pus at present in the lower end of the external wound was the result of the folliculitis infection or was from the frontal sinus.

DR. FREUDENTHAL replied that he thought it was a new infection.

DR. MCCOY then asked whether the wound had at any time returned to a normal condition after the erysipelas.

DR. FREUDENTHAL, replying to Dr. MacKenty, said that although the Wassermann test was negative the patient had received large doses of K. I., with absolutely no effect. It was difficult now to say whether the empyema or the folliculitis were there first, but that he did not think the folliculitis was due to the empyema for there was no discharge and no pus had been seen. He had never seen nor heard of any such case before and thought it probable that the folliculitis was there first.

Replying to the question as to whether the pus in the lower part of the wound was the result of infection, Dr. Freudenthal said that the wound had healed very nicely, like any normal wound; it was completely closed and the woman was about to be discharged, but as soon as the erysipelas set in pus was seen again. He thought that it was due to a new infection. The wound was opened from the outside and the pus soon disappeared, but since then the healing had proceeded slowly.

The patient will probably have to be removed from the home environment and placed in more hygienic surroundings before the folliculitis will be permanently cured.

Dr. McCoy said that he had seen cases where a small portion of membrane had been left in the frontal sinus which kept up the suppuration for several months, so that eventually granulations would spring up and close off drainage from the sinus until some relapse occurred and the external wound reopened. He thought that possibly this reinfection was from the outside.

Dr. Freudenthal said that the case was very clear to him. The condition set in after the erysipelas.

Case of Laryngeal Growth. By Dr. S. W. Thurber.

Dr. Thurber apologized for the title of the case, saying it was apparently a growth when the title was sent in for the meeting but conditions had changed during the month that had intervened.

The patient was a painter, 43 years of age, with a negative family history. He had small-pox when 18 months old and this had left considerable pitting. There is no specific history and he had never suffered from poisoning due to his occupation. Five years ago during a cold, he became hoarse; this condition continued five weeks, when his voice came back to normal. The present attack came on six months ago and the hoarseness had continued up to the present time with no improvement. On examining his nose one sees a perforation of the septum with cicatricial adhesions to the right turbinate. The interior of the nose is rather dry but shows no pus or polypi. Transillumination shows small sinuses.

On examining the larynx, the view was partially cut off by a rounded projection from the posterior wall of the lower pharynx on the left side. This was inflamed and tender. In the larynx a sac-like mass was seen projecting over the right true cord and occluding sufficient glottic space to cause slight dyspnea. It was this latter condition that was taken to be a growth at the time he was first seen.

Under no treatment other than steam and tincture of benzoin inhalations, his pharyngeal and laryngeal lesions have about disappeared. The prominence on the left side of the posterior pharyngeal wall was probably an area of infection from some abrasion and the laryngeal condition an edema or a prolapse of the ventricle but, strange to say, on the opposite side. All that can now be seen in the larynx is a bluish sac lying along the right vocal cord and about one-third as wide as the cord. It is questionable whether this is a prolapse of the ventricle or edema of the edge of the false cord. Dr. Thurber said he had seen but one case which he would really consider a prolapse of the ventricle and he was sceptical as to the frequency of the occurrence of a true prolapse. Were these cases not more often localized edema of the false cord? The man's voice now is quite clear.

DISCUSSION.

Dr. Myles expressed the opinion that it might be a pseudo-prolapse of the ventricle. Not long since he had under observation a patient with an enormous prolapse. It projected as a soft, edematous, rounded mass. He suspected a specific origin, although there was no such history. The Wassermann test was positive, but five injections of neo-salvarsan caused the condition to disappear entirely.

Dr. Quinlan asked the nature of the treatment, to which Dr. Myles replied that it consisted of steam inhalations of benzoin, eucalyptol, acid carbolic and turpentine.

Dr. Quinlan said that it seemed to him like a condition of chronic laryngitis. The man may have more or less faulty resonance, as there was an effort to introduce a certain element of compensation. He thought that astringent applications to the larynx would tend to diminish the congestion and probably reduce the so-called growth. The man's voice was fairly good, and he seems to present the picture usually seen in cases of chronic laryngitis. There was some thickening of the arytenoids and they did not come together with the snap that they should. It might probably be the result of a dyscrasia or some condition of diabetes or struma, or perhaps rheumatism or some other underlying condition. He suggested the application of nitrate of silver or argyol, which he had seen act admirably in similar cases.

Dr. McCoy said that he had seen several cases of prolapse of the ventricle. The patients had usually been pronouncedly alcoholic and had been using their voices very rigorously. He had three or four cases of this type where a diagnosis of prolapsed ventricle was made, and by cutting off the alcohol and treating the larynx with nitrate of silver the prolapse cleared up quickly and the ventricle was quite clearly seen.

Dr. Thurber said that he had been rather disappointed at presenting the case in its present condition, and had tried to maintain the condition as when first seen, for it was very curious and was more like a prolapse of the ventricle than anything he had seen. He thought there was a direct connection between the inflammation of the posterior pharyngeal wall and the laryngeal lesion, and also a connection between the nasal condition and that of the larynx, predisposing to acute attacks of a chronically inflamed laryngeal mucous membrane.

Tuberculous Granuloma of Nasal Septum With Lupus of the External Nose. Dr. J. H. Guentzer.

The patient was an Italian girl, 17 years of age, a factory worker, who had been in this country for five months. On February 18, 1913, she came to the clinic at the Manhattan Eye, Ear and Throat Hospital, complaining of nasal obstruction. Family history was negative, no member of the family having had any similar trouble or skin lesions. She had had no illness until the onset of the present trouble five years ago, which began with a cold, soon followed by the development of tumors circinately about the neck. They have appeared at varying intervals, the last one beginning under the chin about five months ago. These abscesses discharged creamy pus, but responded to treatment after a few weeks. A year ago small red papules appeared on the left cheek and left side of the nose which were treated locally in an Italian hospital. The patient came to this country about five months ago, and about that time, along with the submental abscess small papules appeared on the left side of the nose, spreading over to the right side and also into the left nasal cavity. The poor nasal breathing dates back about a year and is worse at night.

On examination of the nose the above described local conditions were found, along with much intra-nasal thickening of the septal tissue. The mucous membrane was pale. At first the condition was thought to resemble scleroma. The Noguchi-Wassermann test was negative. A piece was removed from the left septal side for examination and was returned from the laboratory with the diagnosis of tubercular granuloma. Von Pirquet test was positive.

One week ago the patient was sent to Bellevue Hospital for treatment under government supervision by Dr. Friedman, and received his injection, which was partly intravenous and partly muscular, and while not therapeutically too optimistic, as far as the external lesion is concerned, it seems to be improved. To-morrow she will go down again and be kept under supervision.

The report of the lung examination showed a few fine crepitations over the left apex; otherwise negative. The patient will be kept under observation, and further developments will be reported.

DISCUSSION.

Dr. McCoy said that he had reported a somewhat similar case before the Section a year before, though the trouble was not quite as extensive. The patient had a lupus lesion on the nose, a typical granuloma in the nose and marked thickening of the septum. She was sent to the Skin Department of the Clinic for treatment of the external condition, where the x-ray was applied. She returned to him three months later and to his very great pleasure, the intra-nasal condition had very markedly improved. The granuloma had almost disappeared and the septum was brought down to almost its normal condition. She has been kept under observation for over a year, and is now almost well.

In a conversation with Dr. Gallaher of Denver, last summer, he mentioned one of his patients, a very beautiful girl, who broke out with a sort of granuloma and was threatened with being badly scarred. He said that he had not tried x-ray treatment, but had tried a tuberculin which he had received from Switzerland. She was markedly improved and he was very well pleased with the result. It might be, therefore, that the tuberculin treatment in this case would give a similar result.

Dr. MacKenty said that he had seen Dr. Guentzer's case when the patient first came to the hospital, and he thought the angry appearance of the granuloma was much diminished; there was also less swelling and less redness. The condition seemed decidedly less active than before the injection.

Dr. Quinlan said that he wished to emphasize the importance of x-ray treatment in these cases. Some years ago he had visited Dr. Finsen's clinic in Copenhagen, where he treated some twelve or fifteen patients in the afternoon. Many of the men said that in these lupoid conditions they did not get the results they desired, and were not satisfied with it. A short time afterward he saw Dr. Schwartz, who was treating ten cases of lupus of the mouth and nostrils by x-ray, and in the eight weeks he spent there he was amazed to see the apparent clearing up of these conditions, and the great improvement in the appearance of the skin. The lesions seemed to absolutely melt away under the x-ray treatment. It is a very valuable adjunctive treatment in this particular class of cases. He had watched these cases very carefully, for he had seen similar ones fail under the Finsen treatment. The x-ray has some influence which nothing else possesses. He desired to endorse heartily what Dr. McCoy had said regarding the use of the x-ray in such conditions.

Dr. Carter said that he also had seen this case when it first came to the dispensary, and he is certain that the aspect of the case has changed considerably for the better since the Friedmann treatment began.

Removal of a Dime From the Larynx After Eighteen Months By Direct Laryngoscopy. Dr. John E. MacKenty.

The patient, aged 24, while performing tricks in September, 1911, had put a dime in his mouth, which slipped down the throat and lodged below the third cartilage. A doctor was consulted, who said he could see the coin and had pushed it down into the stomach. The patient was given apo-morphin to make him vomit it, but he experienced no relief. For three weeks he could not speak above a whisper and could not swallow even water. He was fed with a stomach tube, and lived in that way for two months. At no time did he have any cough, but talking caused vomiting and nausea. This symptom disappeared, and only the lack of voice troubled him. This continued for twelve months, when he began to have attacks of acute dyspnea, which would compel him to get out of bed and hold on to the furniture in order to get his breath. He seldom coughed, but when he did it was violent and accompanied by bleeding from the mouth and profuse expectoration. He came to the Manhattan Clinic about two weeks ago. At that time he had no voice above a whisper, but no cough and no pain. Dr. MacKenty said that he suspected that the coin had something to do with the condition, so had an x-ray picture made, which showed the coin lying in the larynx between the cords. It was easily removed, though it was fairly embedded in the larynx. The patient's voice was improving steadily and the laryngeal opening is growing less.

Dr. MacKenty said that this was the first case reported of a foreign body remaining so long in the larynx and he wished to know what the members thought of the probability of the ultimate recovery of the voice.

DISCUSSION.

Dr. Yankauer said that he had never seen a case of foreign body in the larynx which had remained for anything like such a length of time, and it was interesting to know that the larynx was not much disorganized. In his experience with foreign bodies in the bronchi, they had produced pronounced local lesions at the site of the foreign body. These cases, however, had all recovered very quickly and completely after the removal of the foreign body. He would expect the voice to return ultimately to its normal condition.

Dr. Smith said that he had seen the case prior to any instrumentation and the false cords were granular and fibrous and grew over the top of the coin. He believed that the removal of the irritating cause would probably result in the reduction of the fibrosis. The man's voice was very much better now than when he heard it a week previously. He believed that it was questionable as to whether the true cord would ever be restored, but that when the functionating properties of the larynx were restored he thought there would be sufficient effort on the part of nature to utilize the remains of the true cords and part of the false cords to make an articulate voice. He had seen a picture of a similar case in some of the English books where the coin had lodged in the anterior commissure and had been covered almost entirely by the false cords.

DR. MACPHERSON said that he had seen a case where the foreign body, an intubation tube, had remained for more than a year, and the patient never completely regained control of the voice.

DR. MCCOY said that he was surprised at the small amount of disturbance in the larynx produced by the coin. He himself had a case in a youngster who had swallowed an overcoat button which remained in the esophagus for about ten days before he saw him. In extracting it, he was much surprised at the amount of granulation tissue which had formed around the button. The button could not be seen without pushing the tissue aside. All that can be seen now in Dr. MacKenty's case is a little granular thickening in the left ventricle.

In the case of another youngster who had swallowed a seed, there was a tremendous edema of the larynx, and he had been sent for to pass a direct tube and try to remove the mass, but before he could reach the hospital a tracheotomy had been performed. He passed his finger up through the tracheal opening quickly and easily removed the foreign body. The child's larynx was so badly swollen that they had to resort to tracheotomy to enable him to breathe, and yet in a very short time the edema and swelling cleared up entirely.

DR. THURBER told of two charts in the Lefferts Museum at the College of Physicians and Surgeons showing a dime in the exact location as the one in the case under discussion and a second chart picturing a brass ring in the larynx which had been there three years before removal.

He would like to know how it was that in the case presented by Dr. MacKenty a foreign body could remain in this man's larynx for eighteen months without its being either seen or removed.

DR. LYNAH thought it probable that the voice would return to its normal condition. He had presented some cured cases of stenosis of the larynx last year before this Section in which the patients had worn tubes for varying lengths of time—one of the little girls for five years—yet there was practically normal voice.

DR. MCCULLAGH said that he had had the privilege of seeing the case before any surgical procedure was undertaken, and the most surprising feature was the comparative degree of comfort which the patient had with the very small air space—he seemed to have no interference with his breathing. The cases of the intubation tubes and this coin case are not similar, although both are foreign bodies in the larynx. This foreign body did not exert any pressure on the walls of the larynx. It rested on top of the cords. It would seem that the prognosis in regard to the recovery of the voice was good, for there had been no lateral pressure. What necrosis exists is probably superficial and the cords will probably return to a practically normal condition.

DR. CARTER said that he saw the case before and after the extraction of the coin, and it was a matter of astonishment to him that a coin lying transversely in the larynx could remain there for eighteen months without causing serious disturbance. He had practically no voice before its removal, but it was improving and he would probably recover it entirely, for Dr. Carter believes that the ulceration involves only the superficial epithelium, and that there will be no subsequent cicatricial contraction.

Dr. Simpson, referring to the patient's breathing comfortably with so small an opening, said that he remembered distinctly the results of Dr. O'Dwyer's observations in a number of cases. Adults can breathe comfortably with a very small lumen in the larynx, if this lumen remains stationary. The great danger lies in having an exacerbation of the laryngeal inflammation.

Dr. MacKenty said that the patient had seen a general practioner, and a nose and throat man, who told him that he should have his tonsils removed. He did not understand how the condition escaped attention. As Dr. Simpson had said, the size of the opening was very small. One peculiar feature was that the patient could only lie on his right side; if he lay on back or left side he would have a spasm. The vocal cord is somewhat ulcerated, and there is considerable thickening of the false cord which may not entirely disappear. If later it does not disappear, it may be possible to remove some of the thickening and allow the cords to be approximated.

Laryngeal Papilloma in a Child. Treatment By Direct Laryngoscopy and Tracheotomy. Dr. John McCoy.

Dr. McCoy said that the case was not reported as a cured laryngeal papilloma as yet. It was still under treatment, but was presented for the attention of the Section and also perhaps for suggestions as to the ultimate cure. Thomas F., age, 5, came to the clinic several months ago with a history that his voice had changed two years ago, that he had great difficulty in talking, and that lately his respiration was becoming more and more embarrassed. It was necessary for him to make a strong muscular effort to get air into his lungs. Examination revealed a mass of papilloma in the larynx. He also had a mass of adenoid tissue and large tonsils. It was decided to use direct laryngoscopy in order to remove the papilloma. The boy was placed under an anesthetic (chloroform) and this was watched very carefully. The growth was removed as far as it could be seen, and his breathing became easier. After he was dismissed from the hospital he was seen for several weeks, and after four or five weeks his tonsils and adenoids were removed. About two months after the original operation, his larynx was apparently as badly filled with polypi as before, and his breathing was very labored. It was decided that it was not wise to risk anesthesia without a tracheotomy, so a tracheotomy was performed and he was anesthetized through the tube; the papilloma was again removed and the larynx placed in a condition of physiological rest. The case apparently improved to the extent that the papilloma formed very much more slowly, so that it has taken perhaps three months for the larynx to again fill up. The mother brings him irregularly to the clinic. Last week he was again placed under anesthesia and the papillomata again removed. They were very extensive and involved the true and false cords and the aryteno-epiglottic fold. That brings the case up to date.

Several methods of treating the case now suggest themselves, one being the fulguration treatment. The larynx is fairly well cleaned out now.

Radium also has been considered; another method suggested is one that is now being tried in France—tying off the laryngeal arteries, which would perhaps give a much quicker result with fulguration treatment later.

The child is now wearing a tracheotomy tube with comfort; he eats and sleeps well, and is apparently well and happy, compared to his condition when first seen. Dr. McCoy hopes to present him to the Section at a later date, with the condition entirely cured.

DISCUSSION.

Dr. McCullagh said that Dr. McCoy had mentioned the possibility of using radium in this case, and told of a case of papilloma of the larynx treated with radium which produced a most wonderful result. The woman was one of Dr. Harris' patients whom he had treated during the summer. She gave a positive Wassermann, and it was thought that the growth was a specific granuloma; so she was treated on that basis, with good general treatment but no benefit resulted. When Dr. Harris returned, he removed a piece of the growth for examination. Dr. Abbe applied radium, and the growth has absolutely melted away. Dr. Abbe says that the beneficial effect will continue for some time.

Dr. McCullagh also told of a case in which he had tried physiological rest, putting in a tracheotomy tube about three months ago and removing a small portion of the growth for examination. He saw the case about ten days or two weeks ago and the larynx was practically clear. He was now considering the advisability of removing the tube and closing the wound.

Dr. Freudenthal said that a year ago Dr. Abbe had reported the case to which Dr. McCullagh had referred. One cannot always expect such results, according to Dr. F.'s opinion. It takes a much longer time to effect a cure by means of radium, even in benign tumors. The difficulty here would be how to apply the radium in the larynx of the child. One cannot give the child cocain, and it might have to be given under general anesthesia. The same would be true in regard to the fulguration treatment. He would like to see the appearance of the larynx in such a case under suspension. It would be interesting to see if some growth could not be found which was not visible under indirect inspection.

Dr. Yankauer said that whatever might be the theory of physiological rest in these cases of papilloma of the larynx, the case which he had operated on that afternoon argued against such a theory. The patient was a girl, 19 years of age, who at 2 years of age, had had some glands removed from the side of her neck. Shortly after dyspnea developed and a tracheotomy was done. Since that time it has not been possible to remove the tracheotomy tube. She lived in the West and came to New York City for the purpose of having the tube removed. The entire larynx was filled with an enormous mass of papilloma, which had evidently been there since she was 2 years of age. She had been wearing the tube ever since, and her larynx has been at rest for a long time.

Referring to what Dr. Freudenthal had said about suspension in such a case, he said that he had used that method in the afternoon, and had removed the entire papillomatous mass. He had never before operated on a laryngeal mass in that way, though it was the second or third time that he had used the suspension method. One of the cases had been a laryngeal carcinoma. The method of operating in this case was entirely different from anything which would have been done by any other method, and was most satisfactory. The case was a patient of Dr. Emil Mayer, and he would report it in due time. The patient developed an ulceration on the epiglottis which proved to be carcinomatous. He was anesthetized and suspended, the epiglottis was seized with the forceps and steadied with one hand, and with the other hand an incision was made in the frenum.

The soft tissues were separated from the cartilage of the epiglottis as far as possible. Then the epiglottis was drawn to one side, the mucous membrane severed with a knife; then it was drawn to the other side and opposite mucous membrane incised; then the whole mass was removed in one piece by cutting the pedicle with the scissors. It was done just as one would remove a growth on the outside of the body, and the patient is apparently making a good recovery. It was an entirely different proposition from anything that had been done previously. When the patient, operated upon that afternoon, had been suspended, the entire outline of the larynx was obscured, but with a probe the extent of the attachment of the papillomatous mass could be easily seen. The snare was put around it, and it was cut off. The second bite of the snare removed the greater part of the growth, which was attached to the posterior wall. After checking the bleeding, by clamping the bleeding vessels, the remainder of the growth was carefully pinched off and curetted away; the high frequency current was then applied and the larynx fulgurated. The patient is doing well to-night.

Suspension laryngoscopy is certainly one of the greatest advances made in laryngoscopy, and those who have not had any experience with it should certainly learn the method, for no other method of operating in the larynx can compare with it.

Dr. Smith said that for several years he had been greatly interested in multiple papilloma of the larynx in children. In the past few years he had had in his clinic at the Manhattan Eye, Ear and Throat Hospital, eight cases, practically divided into two series. In the first three cases, tracheotomy had been done almost upon the admission to the hospital, after which the growths had been removed by the direct method at varying intervals in accordance with the rapidity of their recurrence. In each instance the growths had recurred, after operation, in greater number and had extended to new regions of the laryngeal mucosa wherever it had been wounded. During this series, when he was removing these growths, frequently there had occurred upon his hands, a number of small warts, which would tend to show that there was a certain infectivity in the growth or in the blood of the growth. In one of these cases the growths had suddenly disappeared from the larynx upon one application of fulguration which led him to believe that this method might be a sure way of eradicating papilloma. The next case had been one of inherited syphilitic papilloma of both vocal cords which had disappeared upon one injection of salvarsan.

The second series consisted of four cases. These had been treated by the direct removal of the growths and an application of fulguration, but recurrence had invariably taken place. The interval between the application of the spark and recurrence had seemed to be longer than when mere removal by forceps had been accomplished. In one of these cases the child had developed diphtheria and was sent to the Willard Parker Hospital where it died. Another had pulled the tracheal tube out of place during sleep and before the house surgeon could reach the patient he had died. The third case had developed measles and had been sent to the Willard Parker Hospital but had not yet returned. The fourth case was in a boy 12 years of age and the growths had entirely disappeared under an application of fulguration and the larynx has remained free for a space of two months.

Dr. Smith said that up to the present the insertion of a tracheal tube still remains the only sure and positive way of eradicating these growths, although he believes that fulguration will lessen the time requisite for wearing the tube. While there were occasional instances where patients had worn the tracheal tube for years without disappearance of the growths, in the vast majority of cases it was only necessary to wear it from one to two years. Dr. Smith said he did not believe that the approach of puberty had anything to do with the disappearance of the growths, but that rest of the larynx for a certain period, which varied in different cases, was all that was essential to bring about the physiological change which occasioned their disappearance. In some of the cases he had tried thuja occidentalis, in others alcohol as recommended by Delavan, and in some castor-oil, but there had been no appreciable benefit from the employment of any of these remedies.

Dr. Smith said, in regard to the tracheal or laryngeal collapse, that if the tube were frequently removed, which allowed the rings of the trachea to perform their physiological functions, the final withdrawal would be attended with much less respiratory difficulty than if the tube was left *in situ* continuously; that in all of his cases the tube was removed for varying lengths of time previous to the final withdrawal, and that in each instance the tracheal wound had closed up and the voice had become fairly good. In one case only had it been necessary to do a plastic operation to close the wound.

Dr. Guentzer said that he had not had any personal experience in treating these cases of papilloma, but in the majority of them the treatment suggested to-night seems to apply to those cases that occur in the larynx above the cords. In the Manhattan Eye, Ear and Throat Hospital is a specimen of a larynx taken from a child, and one can see that there the vegetations were not only above the cords, but extended an inch below, and appeared in isolated places. In such cases, no matter how thoroughly the growth above the cords was removed, they would eventually recur.

Dr. Smith said that he had detected these growths frequently in the tracheal wound and had snared them off, both from above and below, and they had always recurred rapidly. An idea had occurred to him in regard to these cases based upon the apparent infectivity of the growth, that if an emulsion of the growth was made and injected into either the larynx or into the veins of the child that it might act in the same manner as the cancer emulsion recommended by Beebe; that unquestionably there was something infective in the growths and that while the organism had not been isolated there might be something accomplished by an autogenous injection of an emulsion made from the wart.

Dr. Guentzer said that he had seen a reference in a French journal, where magnesia usta was given internally and locally.

Dr. Yankauer said that he had tried that, and it had no effect. He also tried it in a small papillomata, but it had no effect there either.

Dr. McCoy expressed his appreciation of the interest shown by the discussion. The observation made by Dr. Guentzer tended to show that the tracheotomy should be made as low as possible, for in some of these cases where a tracheotomy was done, the papillomata caused later a serious difficulty. In these cases the growth extended below the cord, and the only instrument which could be used was one of the little forceps which he had devised with the use of the knife, and this took them off very nicely.

He expressed the intention of trying the fulguration treatment on the little fellow he had presented, and would show him again to the Section. He hoped to be able to present him as a cured case.

Foreign Body in Right Bronchus: Lower Bronchoscopy: Successful Extraction. By Dr. Gerhard H. Cocks.

The patient, a boy 2 years of age, of Italian parentage, living in Mount Vernon, N. Y., was brought to Dr. Chappell's clinic at the Manhattan Eye, Ear and Throat Hospital on February 3, 1913. From the mother, who spoke but little English, it was learned that the child had been sick with a cough and labored breathing for the past twenty-four hours. He had been crying, and peanut candy was given to him to quiet him. He coughed violently after receiving the candy, and it was feared that some of the candy might have entered his larynx.

He was a well-nourished child; temperature 101° F., respiration 28; pulse 128. Examination of the chest was negative. The respirations were somewhat noisy and slightly labored. The diagnosis was considered doubtful, in view of the uncertain history. Laryngeal diphtheria, beginning pneumonia, and a foreign body in the respiratory tract, were the three possibilities considered.

Under chloroform narcosis, a Bruenings tube was passed into the larynx on February 3. The larynx and upper part of the trachea were free from any foreign body. During the examination large lumps of mucopus were coughed up into the tube almost constantly. A severe attack of dyspnea ensued during which the tube was withdrawn, covered with pus. Culture showed pneumococci. On account of the patient's poor condition and the uncertainty of diagnosis, the operation was discontinued and the child was returned to the ward. During the next four or five days he suffered from a diffuse bronchitis, with the characteristic physical signs. The temperature reached normal on February 8.

At this time, physical examination of the chest elicited pronounced dullness over the right lung, especially in front, with diminished breath sounds on the right side. The x-ray picture was negative. The child now began to suffer from attacks of severe coughing, attended by considerable dyspnea. On February 11, eight days after admission to the hospital, it being reasonably certain some foreign body was in the right bronchus, Dr. Cocks, assisted by Dr. MacKenty, Dr. Phelps, and the house staff prepared to again introduce a bronchoscopic tube. As soon as the tube reached the epiglottis, the child was seized with a violent coughing spell, choked, stopped breathing, and became deeply cyanosed. The tube was immediately withdrawn from the mouth and a quick tracheotomy was performed, barely in time to save the boy's life.

Through the tracheal opening, the trachea and bronchi were explored with the bronchoscope. The tube entered with ease into the trachea and left bronchus, both of which were free. The right bronchus, however, could not be entered by the tube for any considerable distance, owing to the inflamed and swollen character of its mucosal lining. The bronchoscope was then passed through the tracheal opening up toward the larynx. The tube quickly filled with blood and mucus. As the suction pump failed to clear out the blood, the tube was withdrawn and cleansed with a cotton applicator. One half of a peanut, broken into two pieces was pushed out of the tube. The child was not in especially good condition, and the operation was discontinued after the insertion of a tracheal cannula, which was allowed to remain for forty-eight hours.

During the next six days the child suffered from a broncho-pneumonia involving both lungs, from which, however, he made a good recovery.

On February 18 the temperature, which had been normal for twenty-four hours, suddenly shot up to over 104°, and exhibited this characteristic every forty-eight hours. Careful search of the blood failed to disclose any malarial plasmodia. In view of the characteristic malarial temperature and the fact that the child's home was at Mount Vernon, N. Y., he was given quinin with prompt subsidence of the fever. On March 5, he was discharged from the hospital. Two days later the tracheal wound was completely closed.

It was believed that during the second narcosis, owing to the relaxation induced by the anesthetic, the foreign body was dislodged from its position in the right bronchus by the attack of coughing. It was then carried to the upper part of the trachea, just below the vocal cords, where it plugged the glottis and induced the almost fatal choking attack which necessitated tracheotomy.

DISCUSSION.

Dr. Yankauer asked if the tube was passed into the trachea at the first operation, to which Dr. Cocks replied in the negative, saying that he simply got a good view of the larynx.

Dr. Yankauer responded that he had asked the question because the authorities in Europe are in favor of performing tracheotomy in children immediately in case of foreign body, as in children it is likely to set up a subglottic swelling. He himself had experienced no such difficulty, although he had kept the bronchoscope in place for as long as an hour and a half, with no ill results. He thought that the bad results which some obtained were due to the use of double tubes, which are now almost universally employed; for at the point where the inner tube emerges from the outer tube there is a decided thickening, and this ridge lies a short distance below the vocal cords and is rubbed up and down, thereby producing a subglottic swelling. Dr. Cocks, however, had said that he did not use the tube in the first instance. The accident which occurred on the second attempt, was, of course, due to the fact that the foreign body was coughed up, and if the tube had been got through the larynx at that time it would have been coughed out; when such a spasm occurs, it is difficult to get through the cords with any sort of tube. The patient was fortunate in dislodging the foreign body.

Dr. MacKenty said that he saw the right bronchus, and there was no question about its being practically closed. The way the child acted and its position seemed to point to the fact that it had dislodged the foreign body from the bronchus. The child's chest was examined before the operation two or three times, and there was limitation of movement all over the right lung, showing distinct obstruction. The foreign body was in the larynx while it was being sought for down below.

Dr. Cocks said that after operating on this case he had noticed a statement made by Dr. Ingals, who said that in his experience with children under 2 years of age he had found it impossible to remove foreign bodies from the bronchus without performing a tracheotomy and working through the tracheal opening.

Dr. MacKenty told of two cases under his care which he had so treated at Dr. Smith's suggestion. The cases were inoperable. No sloughing appeared but the part turned white under the point of injection. Both cases resulted very satisfactorily, and there was no ill effect from the use of the monochloracetic acid.

Dr. MacKenty asked if the patient had been put upon specific treatment. In spite of the fact that the Wassermann was negative the case looked very suspicious of specific disease. Then again, might not the folliculitis of the nose be due to the chronic sinusitis. He also asked whether Dr. Feudenthal knew at the beginning that there was any sinusitis, or whether that question came up after the folliculitis of the nose appeared.

Dr. MacKenty said that he had seen Dr. Guentzer's case when the patient first came to the hospital, and he thought the angry appearance of the granuloma was somewhat diminished; there was also less swelling. The condition seemed les active than before the injection.

Regular Meeting, April 23, 1913.

Cases Showing Results of Treatment of Chronic Stenosis of the Larynx.

Dr. Henry L. Lynah.

Case 1: Theresa D., aged 4 years, ill three days. Admitted to the Willard Parker Hospital December 18, 1911. Intubated for laryngeal diphtheria with a 4-5 O'Dwyer tube.

The patient was unable to remain without the tube on the first extubation owing to spasm of the adductors. The spasm of the adductors was so persistent that she was treated by a cut-out posterior abductor tube. After two months' treatment with this tube the spasm improved and she was able to remain without the tube for three days, but owing to gradual hypertrophic contraction reintubation was necessary, and treatment by dilating tubes was resorted to in order to overcome this condition. These tubes were gradually increased in size, but owing to the marked spasm element, narrow neck and cut-out tubes were used alternately with the dilating tubes, to allow for play of the vocal cords and arytenoid cartilages. This treatment was carried on for a period of four months. The spasm seemed to have been more aggravated by the dilating tubes and their use was discontinued, and the cut-out and narrow neck tubes were used only without any dilatation. These tubes were used for two months, after which period the time-interval gradually lengthened between extubation and re-intubation.

On June 20, the patient remained without the tube for a period of twenty-four hours, but owing to a delayed spasm it was necessary to re-intubate. As the adductor spasm had improved and the hypertrophic contraction was no longer bothersome, the same treatment by narrow neck tubes was continued. On August 6, 1912, the tube was removed and the patient breathed quite naturally and has remained without the tube ever since.

December, 1912, the patient developed broncho-pneumonia and empyema and was readmitted to the hospital. There was no dyspnea at this time and the larynx had presumably returned to normal, though at times there was some slight spasm of the adductors when the child became excited. The voice is good, though of slightly husky quality. Duration of treatment nine months. The patient has been without the tube for eight months.

Case 2: Lilly C., aged 6 years, ill four days. Admitted to the Willard Parker Hospital December 14, 1910. Intubated for laryngeal diphtheria. This patient was also unable to remain without the tube on the first extubation owing to a marked nervous element which promoted a very violent adductor spasm. This condition was treated by abductor tubes but the nervous element was difficult to overcome and re-intubation was at all times an immediate necessity.

By April, 1911, the spasm element had been overcome and the patient remained without the tube for three days, but slow progressive spells of inspiratory and expiratory dyspnea necessitated re-intubation, and later gradual dilatation. Three days later a direct laryngeal examination under anesthesia revealed a mass of hypertrophic polypoid tissue at the base of the epiglottis and ventricular bands. Large dilating and built-up head tubes were used to mash out these masses and produce atrophy, for pressure on this very vascular tissue will produce absorption by cutting off the blood supply.

After three months treatment by dilatation the child remained without the tube for five days, the gradual contraction necessitating re-intubation. Dilatation was continued with an increase of one millimeter once a week. This treatment was continued until November 20, when the patient was extubated and allowed to remain without the tube. This time the little girl was unable to remain without the tube, as she had done at the former trial, for the increased dilatation had also increased the fatigue of the abductors and the opposing set of muscles resulting in a violent spasm. Narrow neck and cut-out tubes were used, but unfortunately when the spasm was overcome the gradual hypertrophic contraction would necessitate continued dilatation. This treatment by dilatation and narrow neck tubes was continued for a period of nine months the patient being able to remain without the tube for intervals of from five to ten days during this period. September 29, 1912. After another month of treatment by enormous dilatation the child was able to remain without the tube for thirty-two days, but owing to gradual new connective tissue contraction, it was necessary to re-intubate, which was extremely difficult even with a very small one-year tube. Once more dilatation was resorted to, alternating with narrow neck tubes. On November 15, 1912, the tube was removed and the patient broke her record of thirty-two days, for she has remained without the tube ever since. Duration of treatment, one year and eleven months. Without tube for five months. She has a very good voice and there is no stridor at the present time.

Case 3: Bertha E., aged 6½ years, ill five days. Admitted to the Willard Parker Hospital May 13, 1909. Intubated for laryngeal diphtheria with a 6-7 O'Dwyer tube.

The patient had a severe attack of laryngeal diphtheria and commenced auto-extubation on the tenth day of the disease. This auto-extubation was persistent and the patient would cough out the tube from eight to ten times in the twenty-four hours. This condition was due to perichondritis at the cricoid. At times when the tube was coughed out the patient was able to remain without it for a few hours; this was before the absorption was complete, but later, a marked nervous element accompanied by very violent spasm of the adductors necessitated immediate re-intubation. Often the child would border upon a convulsion when put upon the table for intubation after the tube had been coughed up, and she was practically dead more than once before the mouth-gag could be inserted between the jaws and intubation performed.

Later on, in June, after the cough-up stage had passed, the spasm of the adductors became so violent that it was extremely difficult to remove the tube from the larynx. When the tube, after great difficulty, was finally removed, there would be a loud inspiratory stridor and a few minutes later the spasm would necessitate re-intubation. This condition persisted and the patient was unable to remain without the tube longer than 15 minutes. Narrow neck tubes were used in an endeavor to improve this condition. On November 28, 1909, six months later the spasm had slightly improved, but hypertrophic contraction, the result of the persistent auto-extubation stage, necessitated treatment by dilatation. This was continued for another six months, with the interval between extubation and re-intubation varying from six to twenty-four hours.

May 29, 1910. The parents made a fuss about taking the child home, for they complained that she did not improve, and had been in the hospital long enough. I protested, but the mother had made up her mind to take the child home and was so persistent in her efforts that finally the superintendent of the hospital granted this privilege and the parents assumed all responsibility for the care of the child, with the tube in, while at home. The child remained at home for one year, the tube having been changed once each month. I finally persuaded the mother to give us another chance and the patient was readmitted to the hospital October 29, 1911. On this date dilatation was once more resorted to. "Special tubes" with built-up heads were used. These tubes dilated antero-posterior as well as laterally. The regular tube of O'Dwyer had been in the larynx since the time the mother took the child from the hospital. These "special tubes" were gradually increased in size once each week until the greatest possible dilatation was accomplished, then the sizes were reduced and narrow-neck tubes introduced. After six months treatment the patient was able to leave the intubation table for the longest period since admission and remained without the tube for three days, but gradual hypertrophic contraction necessitated re-intubation.

In June, 1912, after two months of treatment with tubes of enormous diameters, the patient was able to remain without the tube for twenty-eight days, but once more gradual contraction necessitated re-intubation and the treatment was repeated. In August, two months later, the patient coughed out the dilating tube and has remained without the tube ever since. Duration of intubation was 3¼ years. The child has a normal voice and has been without the tube for 8½ months.

Case 4: Mary R., aged 3½ years. Ill four days. Admitted to the Willard Parker Hospital June 26, 1911. Intubated with a 3-year O'Dwyer tube. The patient was one of the auto-extubation type during the first month, and coughed up the tube on an average of from two to eight times per day. On August 2, after the cough-up stage had subsided, it was necessary to use narrow-neck tubes owing to spasm of the adductors. After two months' treatment with these tubes the spasm improved and the child was able to remain without the tube for four days, but hypertrophic contraction caused re-intubation at the end of this period. The treatment was now alternated with dilating and narrow-neck tubes and carried on for two more months with the interval between extubation and intubation gradually becoming longer in duration.

By December 15, 1911, the child had remained without the tube for six days, the longest time since admission. The spasm element had been overcome but the hypertrophic contraction had not been overcome, and this seemed to be the factor to deal with at the present time.

June 10, 1912, the tube was removed and it was unnecessary to replace it for ten days, this being due to gradual contraction, and intubation was extremely difficult. The treatment from now on was by greatly increased dilatation. The intervals between extubation and re-intubation gradually increased in length and after five months the patient remained without the tube.

Duration of treatment 1 year and 8 months. The patient has been without the tube for three and one-half months. I have never heard the child speak, though the nurses tell me that she has a good voice.

DISCUSSION.

DR. HARMON SMITH thought that Dr. Lynah was certainly to be congratulated on the outcome of these cases, but for the sake of individual enlightenment he would like to ask (1) whether more cicatricial stenoses are found in young children than in older ones, also whether it is easier to overcome a stenosis in the younger children?; (2) Where does the stenosis most frequently occur?; (3) If the stenosis is removed, what length of time ordinarily elapses before the recurrence, or how long before the fibrous elements incident to the primary stenosis pull the larynx together?

DR. HERZIG inquired how often the tube was changed, and DR. LYNAH replied, once a week.

DR. EMIL MAYER asked Dr. Lynah how long the tube should be worn before taking the chances of removing it. In his own experience, no set time could be established, but too prolonged wearing of the tube, four or five weeks, seems to be followed by bad results.

DR. THURBER asked if there was not some abductor paralysis from pressure, otherwise would the adductor spasm last so long. These spasms seemed to show decidedly weakened abductors.

DR. CARTER asked if in any of these cases there was a tendency for the membrane to spread down into the trachea, and, if so, would the treatment adopted in these cases have been effective, also whether the prompt administration of anti-toxin would have caused the membrane to be loosened and coughed out?

DR. LYNAH, replying to Dr. Smith, said that the types of cases all seemed to be about the same. The difference depended on how long the hypertrophic condition had lasted. During the past year he had had sixty-two subacute cases. These patients wore tubes from two weeks to two months and then recovered without any special treatment. The very mild cases get well practically by themselves. So far as the age of the child was concerned, it was easier to treat the older than the younger children, but he had two cases in older children who had worn tubes for a period of five years.

The duration of treatment depended upon the degree of adductor spasm and the pathological changes in the mucosa, sub-mucosa, and cartilage. There is thickening of the mucosa and submucosa, even in the early cases, or ulceration may be rapid and bring about perichondritis of the cartilages with new bone formation taking the place of the former cartilage. There was no recurrent laryngeal nerve paralysis, the adductor spasm being caused by the functional disuse of the abductors.

Some x-ray pictures have shown shadows of bony development at the cricoid level.

The case cited by Dr. Mayer was extremely interesting because of its being a chronic tracheal canula case. Dr. Mayer said that the child had been in the hospital for one month and that he had dilated from below upward by means of sounds, he had also used a uterine dilator from above downward and suspension laryngoscopy which had given a splendid view of the larynx while he was dilating. Dr. Lynah said such a case should be dilated to the extreme limit with intubation tubes, but at the same time narrow neck tubes should be used to overcome the amount of tension put upon the intra-laryngeal muscles.

Dr. Lynah said that these cicatrix cases require from two to three years to effect a cure but some of the purely hypertrophic types he had treated for five years before they recovered. The voice, however, is always better in cases treated by dilatation, and occasionally in the cicatrix type the voice may be lost.

Section of the nerve in the cough-up cases showed that the nerve was perfectly normal. It was surprising to see the muscles present. They showed some myocytis. There was no bilateral abductor paralysis and the condition seemed to be due to functional disuse of the muscles, as when an arm is fixed in a splint. The tube acts as this splint to the intra-laryngeal muscles. The purpose of my cut-out posterior tube is to allow for play of the muscles and motion to the arytenoid cartilages.

Replying to Dr. Carter, Dr. Lynah said that none of the cases presented had had tracheal or bronchial stenosis; in fact most of the tracheal and bronchial types of diphtheria died from mechanical obstruction to respiration or later from broncho-pneumonia. He doubted whether antitoxin had much effect in such cases for owing to the passive congestion of the lungs the absorption of antitoxin must be extremely slow.

(To be continued).

Intra-tracheal Insufflation Anesthesia. F. J. Cotton and W. M. Boothby, *Ann. of Surg.*, Jan., 1913.

The authors draw the following conclusions: (1) Intra-tracheal insufflation respiration is the only artificial method that absolutely provides for a sufficient aeration of the lungs, regardless of the respiratory movements of the patient, and that, properly administered and safe-guarded, can be rendered devoid of intrinsic danger. 2. Therefore, anesthesia by this method is indicated whenever the operation is about to interfere in any way with the ability of the patient to voluntarily respire, and should be used in all intrathoracic work and in extensive operations about the head, neck, and mouth. Ether with air, preferably supplied by a foot-pump, is the most applicable of the various anesthetics for general use, though nitrous oxid-oxygen with minimal quantities of ether may also be used. To prevent deaths from emphysema, no matter what form of apparatus be used it must be provided with a safety-valve by means of which the intrathoracic pressure cannot exceed 15 mm. mercury.

Ed.

XV. INTERNATIONAL CONGRESS OF MEDICINE, LONDON

SECTION ON RHINOLOGY AND LARYNGOLOGY.

Annual Meeting.
Introductory Remarks by the President
Sir St. Clair Thomson.

The last time that the International Congress of Medicine was held in London was in 1881, when, as a student, I attended some of the meetings. Although there were separate sections for Otology, Ophthalmology, Dermatology and Odontology, yet 32 years ago our special department of practice had not attained to a separate, autonomous section. Rhinology was hardly recognized and laryngology was relegated to a sub-section and had no president. The sittings were presided over by a Chairman selected from the Vice-Presidents of the Section of Medicine. That Chairman was Sir George Johnson, my own chief, who, however, desired to be known as a general physician although his observation on the inervation of the larynx are worthy of remembrance. The number of laryngologists who inscribed their names as members of this sub-section, this Cinderella of the specialities, was 342 and the average daily attendance at the sittings varied from 60 to 100. To-day already 230 have inscribed their names, and judging from this morning's gathering our attendance will be numbered in hundreds.

In the year 1881 eighteen hours was given up to discussing 38 papers. This year we are prepared to devote 30 hours debating 5 reports and 34 communications.

The Chairman of 1881 has been gathered to his forefathers, but all the three secretaries of that occasion are, I rejoice to say, still amongst us and in the full enjoyment of health and vigour. Dr. de Haviland Hall has been lured into the wider field of internal medicine; Dr. T. J. Walker in the provincial town of Peterborough where I commenced my studies of medicine as his pupil, has won renown as a general surgeon, but Sir Felix Semon has continued to be the devoted apostle of laryngology and in his retirement from active practice he remains an attached follower and a detached critic.

It might be interesting if I briefly referred to the subjects of discussion in 1881 and left to all present to draw their own comparisons with the program of work we have before us to-day, in this way showing how swift and mighty has been the progress of rhino-laryngology in these 32 years.

The Chairman in his opening address in 1881 still felt it necessary to uphold the claims and benefits of the laryngoscope and Manuel Garcia again narrated how the possiblity of viewing the living laynx flashed across his imagination while he was strolling in the garden of the Palais Royal, that historical September day in 1854. The local treatment of diphtheria now-a-days, thanks to the wonderful discovery of antitoxin, of such secondary, I might almost say, of such trifling importance, was one of the subjects of set discussion, and the rapporteurs were Morrell Mackenzie, Tobold and Lennox Browne. Krishaber, of Paris, announced his firm conviction that tuberculosis of the larynx, while possibly healing in one part, yet always broke out in another, and so invariably ended fatally, generally within a year, although "quelques cas resistent deux ans."

A debate on laryngeal paralyses set the foundation of our now established classification of these affections and gave the early embodiment of what we know as the Semon law. It gives us pause to read that a subject of debate was "The Indications for Extra- or Intralaryngeal Treatment of Benign Tumors of the Larynx," when at present all the world knows that every simple growth can be removed by the intralaryngeal route according to the Hippocratic principle "cito, tutto et jucunde." But doubtless the subject was chosen to enlighten the medical public as to the possibilities of the laryngoscope, which was then only 25 years old.

Stenosis of the larynx, still in our day a *bete noire* to the laryngologist, was another subject of general discussion in 1881, one of the rapporteurs being our confrere Heryng, of Warsaw.

The indications for partial or complete extirpation of the larynx were discussed, but laryngo-fissure was not even mentioned during the debate. At that date and for some years afterwards, the operation was so disastrous that there was little anticipation of the brilliant results we now obtain.

At our previous London Congress the galvano-cautery had hardly started on its useful, although sometimes wild career, yet in a discussion introduced by Voltolini, Solis-Cohen, Cadier, Lennox Browne, Foulis and Victor Lange, one conclusion arrived at even 32 years ago was that the electric cautery was often used unnecessarily.

Adenoid vegetations were discussed in a masterly way by their discoverer, Wilhelm Meyer, followed by Loewenberg, Guye and Woakes.

The everlasting subject of ozena came in for consideration, and five other communications on various subjects completed the program.

It is interesting to note that in 1881 there was not a single communication on the surgery of the nose, on diseases of the accessory sinuses, on the bacteriology of the air passages, or on laryngo-fissures. At that date cocain was unknown, adrenalin was undreamt of, and electricity was not available for illumination.

The trachea was only partly visible when reflected in the laryngeal mirror; but the hardihood of the early pioneers of rhino-laryngology is shown by the record that Morell Mackenzie and Stoerk showed their esophagoscopes and the former even exhibited a patient on whom he had performed internal esophagotomy.

What will mark the next stage of our progress I will not venture to predict. It only remains for me as spokesman of the Council of the Section and on behalf of all British laryngologists to bid you one and all a hearty welcome, and to assure you, in the words of Shakespeare, that "our true intent is all for your delight."

In a few well-chosen words the Chairman also spoke in German, French and Italian, summarizing his greetings to the Congressists attending from those foreign lands.

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ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

REPORT OF EIGHT CASES OF PURULENT MENINGITIS OPERATED UPON BY THE HAINES' METHOD. POST-MORTEM FINDINGS.*

DR. EWING W. DAY, PITTSBURGH.

Probably no paper presented at the last meeting of our Society awakened more interest than that read by Dr. Haynes on drainage of the cisterna magna for the cure of acute meningitis. His procedure, carefully worked out on the cadaver, appealed strongly to all who heard the paper, as being entirely reasonable on surgical grounds, and as offering great possibilities as a curative measure in the treatment of that most fatal aural complication.

During the past year, drainage of the cisterna magna for suppurative meningitis has been on trial but the results are still unknown. The number of these cases that falls to one surgeon is so small that years would be required for any individual, on the basis of his own experience, to form a true judgment of the worth of the operation. If, however, we can have a report of the results of all the members present, the total number of cases will undoubtedly be large enough to enable us to place an approximately just value on this operation.

The writer has, during the last year, treated twelve cases of suppurative meningitis, nine of them by drainage of the cisterna magna. Two of these were secondary to lobar pneumonia, the infecting meningeal organism being pneumococcus; two followed fractures of the base of the skull, involving the roof of the naso-pharynx, through which there was pneumococcic infection; five were of otitic origin, including two cases that had a purulent labyrinthitis, the organism being streptococcus pyogenes in three of these and a mixed infection in the other two. It is interesting to note that of four of these cases with streptococci in the meninges, two showed staphylococci among other bacteria but no streptococci in the pus from the ear and mastoid.

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*Read at the meeting of the American Laryngological, Rhinological and Otological Society, Washington, D. C., May 9, 1913.

Feeling that early operation is an important factor in success in these cases, we tried to estimate the probable lapse of time between the invasion of the meningitis and operation. In case 1, a baby, the cisterna magna was drained thirty-six hours after the first signs of fretfulness, and twenty-one hours after the first convulsion. Case 5, with chronic purulent otitis media and acute labyrinthitis, under close observation in the hospital, with spinal fluid free from bacteria and temperature normal for two days, and without vertigo or pain, one afternoon at 2 p. m. had a chill and a temperature of 102°, and was operated upon at 4 p. m. In this case we believe that but a few hours intervened between the invasion of the meningitis and establishment of drainage. Case 4, also under hospital observation, was operated upon in from twenty-four to thirty-six hours after the onset of the meningitis. Case 3 was well advanced and in a hopeless condition when admitted to the hospital. The remaining five were probably in the third or fourth day of the disease when operated upon.

Special attention was given during the year to observation of the condition of the veins of the fundus and to the blood-pressure. The eye grounds were independently examined by two oculists of the hospital staff. In four cases that were under observation before the meningitis was diagnosed, this was done daily. In only one case was there any evidence of edema of the fundal veins. The blood-pressure was taken twice daily, always by the same person, and in no case could we demonstrate any constantly increasing pressure. In Case 5, where we believe we drained a few hours after the meningeal invasion, there was a steady fall in systolic blood-pressure for five days from 120, at the time of admission to the hospital when the cisterna magna was opened, to 105.

The length of time between operation and death varied widely, in the three cases operated upon early the interval was one, three and twenty-two days respectively; in those opened after three or four days of illness the interval was eighteen hours, thirty hours, two days and four days; in the late hopeless case, three days. In the last case, the only one that recovered, the period of invasion was indefinite and the diagnosis not positively proved.

The establishment of free drainage for the cerebral fluid was without special difficulties, except in one case due to an unsuspected abscess of the right cerebellar lobe crowding that lobe across the median line. In seven cases the amount of fluid drained in twenty-four hours averaged about eight ounces. In one case, in which the dressings were weighed before being applied and again immediately on removal at the end of twelve-hour periods, there was a daily drainage of cerebral fluid of 11⅓ ounces for a period of eight days, no allowance being made for evaporation that may have occurred despite rubber-cap protection. This later on diminished to $2^1/_{10}$ ounces. A chemical analysis of this fluid was made by Professor Guthrie of the Medical Department of the University of Pittsburgh, who reported that it met all the requirements of normal cerebral fluid, and was not a serious transudate. In the case that recovered, there was an almost dry cisterna magna with a probable flow of not more than 2 or 3 ounces in forty-eight hours.

The symptoms present in seven of these cases were those characteristic of meningitis. In the two cases, however, where the meningitis was secondary to fracture of the base of the skull, there were extreme restlessness and later violent delirium requiring restraint in bed. These symptoms were not diminished by draining the cisterna magna. From the post-mortem findings, it was probable that in these cases reduction of the intra-cranial pressure had caused fresh bleeding from a ruptured vessel with the formation of a second blood-clot. In all cases but one, and this gave a dry tap, the diagnosis of meningitis was confirmed by lumbar puncture.

Subsequent to the operation in all the cases, except the two secondary to fracture of the base of the skull, there was a considerable deviation from the usual clinical course of suppurative meningitis, in that there was at first a definite period of improvement in their condition, evidenced by lessening or absence of headache, clearer mentality, loss of muscular rigidity, lower temperature and pulse. This stage was later followed, sometimes rapidly, but more often slowly, by the usual progressive sepsis, and finally ended in a deep septic coma, and death, apparently free from pain.

In duration, the period of improvement varied from a few hours in the worst cases to nine days in the most favorable cases. It is interesting to note that this period of improvement seemed to depend more on the virulence of the infecting organism than on the duration of the meningitis before operation. Of the two cases operated upon early, in one the improvement lasted but a few hours and death followed in thirty-six hours. Culture gave an abundant growth of streptococcus pyogenes in twenty-four hours. In the other, where the improvement lasted nine days, two cultures were sterile after seventy-two hours, and a third, made from dressings packed in the wound, gave but a feeble growth after seventy-two hours. This inverse ratio between the virulence of the infection and duration of improvement was noted to a less marked degree in other cases.

Thus suppurative meningitis, treated by drainage of the cisterna magna, presents three well-defined periods: (1) the period of invasion; (2) the period of improvement; (3) the period of sepsis.

An explanation for this clinical course might be as follows: The cerebral fluid from its source in the lateral ventricles passes to the brain surface via the third and fourth ventricles and cisterna magna, thence through the dural spaces to disappear mainly into the venous circulation of the superior longitudinal sinus. In meningitis, as this fluid flows over the infected areas, it gathers the products of the infections and carries them in a steady stream into the venous circulation and this produces the relatively constant high septic temperature, characteristic of this disease. When the cisterna magna is opened, the fluid is diverted from its normal course and no longer passes over the infected brain surface, but leaves the skull at the cisterna magna, and the toxins are no longer washed into the circulation. This results in a fall of the temperature, the relief of the brain pressure, and the period of improvement. However, all the infection entangled in the meshes of the arachnoid spaces does not drain back to the drainage opening, and these remaining foci, nature is unable to overcome. The period of improvement will continue until absorption from these areas ushers in the period of sepsis. These three periods are clearly defined in the following case:

Case I: E. G., aged 22, American, admitted to the Eye and Ear Hospital, November 18, 1912. Chief complaints—headache, vertigo, vomiting. On November 3, patient awoke from an afternoon nap. On sitting up in bed he was seized with extreme dizziness and vertigo; vomited at intervals; had constant but never severe headache; was confined to bed as he was too dizzy to walk. He had been hard of hearing in both ears, but the right, his best ear, which had been discharging at intervals for years, had become totally deaf since this attack. Never mastoid pain nor tenderness.

General Examination: Patient seemed perfectly rational and not particularly uncomfortable. Showed no traces of mental dullness, irritability, or inco-ordination. With eyes closed, considerable swaying but no tendency to fall in any definite direction. Knee jerks slightly exaggerated on both sides. Kernig's sign negative. Eye grounds negative, no blurring of the edges of the disc or fullness of the veins. Blood pressure: systolic 120, diastolic 60. W. B. C. 11,200. Polys. 74 per cent. Lumbar puncture, clear fluid under normal pressure, free from bacteria by smear and culture. Right ear showed complete destruction of drum and some pus in canal. Caloric test negative. C_4 heard faintly.

Temperature and condition improved until November 22. At 8 a. m. temperature was normal. At 2 p. m. patient had a chill and temperature 102°. Kernig's sign positive. Spinal fluid milky, but smears were negative. Cultures from centrifuged sediment sterile in various media.

Blood pressure record from time of admission, was: November 18, p. m.—Systolic, 120; diastolic, 60. November 19, a. m.—Systolic, 110; diastolic, 60. November 19, p. m.—Systolic, 115; diastolic, 60. November 20, a. m.—Systolic, 110; diastolic, 60. November 20, p. m.—Systolic, 105; diastolic, 60. November 21, a. m.—Systolic, 100; diastolic, 65. November 22, a. m.—Systolic, 105; diastolic, 60. After operation, 100 for several days.

Two hours after the chill the mastoid was opened. Bone was sclerotic, antrum filled with granulations and pus under pressure. Fistula led into a horizontal canal near ampulla; vestibule and canal opened and found to contain free pus. Cochlea apparently free from infection. Cisterna magna then drained.

The patient made a good recovery from operation. Twenty-four hours later temperature had not been above 100.4°. General condition good. No headache, Kernig's sign negative, no rigidity of neck. The improvement was much greater than indicated by the clinical chart. This improved condition continued for nine days with temperature ranging from 99° to 101°. Then on December 2 there was nausea and vomiting, frontal headache, steadily rising temperature during the day to 104° at 4 p. m., which fell during the night. On the following day this cycle was repeated with a chill, temperature reaching 105°. Fearing a septic sinus thrombosis, the sinus and an area of the temporal dura were exposed for temporal drainage if needed. The dura here presented a dry parchment-like appearance with no sign of fluid or moisture when opened. The sinus was incised for one-quarter inch and found clear. This incision was then covered with a small pad without obliterating the sinus.

Patient was now in septic stage, with temperature ranging from 100° to 105° in the twenty-four hours, which cycle continued until death ten days later. During this time autogenous vaccine in doses from 50,000,000 to 75,000,000 were given without result. The day before the patient's death irrigation with normal salt solution at a temperature of 100° was carried out through a cannula in the lumbar spine, flushing the spinal canal out through the opening in the cisterna magna. This procedure removed a quantity of purulent material but did not benefit the patient. The drainage of cerebral fluid throughout the disease was free and abundant until the last few days. Four days after the operation, by careful estimation, it totaled 11⅓ ounces, but later diminished to $3^{8}/_{10}$ ounces. From December 10 the patient's condition became progressively worse, with onset of opisthotonos and delirium. Autopsy December 13, 1912, by Dr. Klotz, one hour after death.

Abstract from report of autopsy: "The dura was closely attached to the skull-cap, so that in removing the bone it was also cut through. In thus removing the skull-cap, it was found that a considerable space was present between the inner surface of the dura and the brain substance. The dura at the vertex was quite normal and it was observed that the surfaces of the hemispheres were unusually dry and free from fluid. The convulutions of the hemispheres showed no flattening and no evidence of compression. The sinuses of the dura were all clear and without any evidence of thrombosis. The right lateral sinus, which had been opened by operation, was found normal, and on the inner side no evidence of the operative incision into the sinus could be observed. There was no clotting at the point of incision. In the cisterna magna there was some slight evidence of inflammatory reaction and evidence of a little granular lymph was present near the opening. In the region of the right middle ear the dura appeared very shiny, but along the superior border of the petrous bone there was some injection of the fine vessels. There was, however, no evidence of lymph exudate over the petrous bone on either side. The anterior fossa of the skull was normal. Other than a slight congestion around the right petrous bone, the middle fossa was free from disease. The posterior fossa showed some inflammatory exudate at the base of the skull over the basilar process of the occipital bone and the body of the sphenoid. Here it was found that some yellow lymph was present over the body of the occipital bone, as well as around the circumference of the foramen magnum and extending a slight distance over the portion of bone at the cisterna magna. Anteriorly the lymph exudate was present over the anterior and posterior clinoid processes, as well as over the diaphragm covering the pituitary body.

"*Brain*: The vessels of the hemispheres and cerebellum were considerably injected. The surface was dry. The hemispheres were otherwise fairly normal in appearance, save for a slight amount of yellowish exudate extending along the Sylvian fissure on the left side. This exudate could be followed along the fissure to the base of the brain. On the under-surface of the brain a considerable quantity of yellowish, elastic lymph was present from the optic commissure backwards over the crura, pons, medulla and the upper portion of the spinal cord. The exudate was most intense over the medulla and the adjacent parts of the cerebellum. The lobes of the cerebellum were otherwise free from any evidence of inflammatory lymph. There was, however, a little yellowish lymph around the brain stem, close beneath the occipital lobes. There was also a little lymph on the cerebellum just above the medulla. This latter area was opposite the point of drainage in the cisterna. The lymph that was present at the base of the brain was of such quantity that the basilar artery and the circle of Willis were completely covered.

"The striking feature that presented itself in connection with the brain was the localization of the exudate to the base with only a slight deposit along the vessels of the left Sylvian fissure. The cerebral and the cerebellar hemispheres were both free from an inflammatory deposit, except where this tissue bordered upon the structures at the base.

"The pituitary body showed some exudate along the infundibulum. The pituitary itself appear reddened.

"The petrous bone on the right side was opened and a yellowish-red exudate was found present in the semi-circular canals. There was, however, no evidence of exudate in the cochlea. This canal contained a clear watery fluid. The left middle ear was found quite healthy.

"*Bacteriology*: During life the cerebral spinal fluid was examined bacteriologically on several occasions. On November 18, 1912, fluid was obtained by lumbar puncture. The cell count of this fluid showed an excess number of polymorphonuclear leucocytes. No bacteria were obtained either in direct smears nor in the culture made from this fluid.

"On November 22, 1912, some spinal fluid was again obtained, and at this time it was distinctly milky and a fibrin mesh-work developed in the fluid. Direct smears showed abundant leucocytes. No bacteria could be made out in the direct smears, nor were there any obtained in the cultures, though these were made on a variety of media.

"On November 25, 1912, materials were received from the mastoid, the labyrinth and the cisterna magna. Direct smears showed the presence of chains of gram-positive cocci in the material from the mastoid. In none of the other direct smears were bacteria observed. Cultures made from these materials from the different regions showed the following results: Mastoid, B. Proteus vulgaris, B. Plebius, streptococcus mitis. Labyrinth, B. Proteus vulgaris, B. Alkaligenes. Cisterna magna, M. Zymogenes.

"On November 28, 1912, some fluid which was aspirated from the cisterna magna was examined. Cultures of this fluid showed the presence of staphylococcus aureus alone.

"On December 10, 1912, fluid was obtained from the cisterna magna by injecting saline through a lumbar puncture. Cultures of this fluid showed the presence of the streptococcus pyogenes and the staphylococcus aureus.

"At autopsy a culture was taken from the fluid at the base. From this fluid the streptococcus pyogenes as well as a staphylococcus aureus was isolated."

Case 2: Our last case, diagnosed clinically as acute suppurative meningitis, recovered. The diagnosis, however, was never proved and is open to doubt. The patient, Martin, a foreigner, speaking an unusual Slavish dialect, was admitted to the Eye and Ear Hospital, February 2, 1913. History, indefinite from inability of interpreter to understand well, was of pain in left ear, headache, and dizziness for one week. General examination: Patient very restless and noisy at times; at others, stupid and semi-comatose. Temperature, 99°. Eye examination negative. W. B. C. 15,600. Polys, 74 per cent. Systolic blood pressure, 110. No cervical rigidity. Negative Kernig's. Negative caloric test. Lumbar puncture in six attempts gave absolutely dry taps.

Simple mastoid operation was done by Dr. Waldie. Extensive necrosis found. On following day there was no improvement. Patient was very restless and had severe head pains. Neck muscles very rigid. Kernig's positive. Temperature, 103°. Neumann's labyrinth operation done. Pus and granulations found. No retrolabyrinthine abscess or dural necrosis. The cisterna magna was then opened with escape of a scant amount of cerebral fluid, about one ounce under no pressure. As the dressing was not moist from drainage, it was not changed for four days, during which time the patient did not improve, but continued very restless and noisy, requiring the use of morphin. When the dressing was removed about one ounce of thick, yellow pus escaped. After this the patient had an uneventful recovery extending over six weeks.

The interesting features of this case are: 1. Though the clinical symptoms were those of meningitis, the pulse did not follow the temperature typically, but remained generally at about 90°. 2. The dry tap from the lumbar puncture and scant amount of cerebral fluid. 3. Rupture of a cerebellar abscess through the operation wound. 4. The fact that the meningitis, if present, was probably circumscribed.

From the clinical observation of these nine cases, and the postmortem findings, which presented in general the same pathological conditions, and differed only in the extent of areas involved, we are led to the following conclusions: Drainage of the cisterna magna hinders the development of a diffuse meningitis over the hemispheres, prevents the accumulation of inflammatory exudate in the subdural spaces, but appears to have no effect upon the accumulation of pus in the pia-arachnoid, and does not influence the progress of the infection at the base of the brain. The accumulation here was present in all of our post-mortems, extending from the optic commissure backwards over the crura, pons, medulla and the upper anterior portion of the spinal cord.

350 Winebiddle Avenue.

Case of Cerebellar Abscess of Otitic Origin Successfully Operated.

U. Calamida. *Arch. ital. di. Otol.,* July, 1913, p 281.

Man of 31 years who suffered since childhood from otorrhea of right ear. Sudden attack of pain, vertigo, headache, paralysis of right facial nerve with increase of suppuration. Three months later operation at which a large cerebellar abscess was found. Recovery. The author discusses the symptomatology and states that the prognosis is doubtful. Ed.

CONGENITAL ABSENCE OF BOTH EARS.

DR. R. C. LYNCH, NEW ORLEANS.

"Even Nature forgets" and yet in almost all of the instances of her unusual development or lack of development she has at least shown some effort toward the production of missing parts, or the reduction of accessory parts, but in the instance reported here she has actually forgotten entirely the development of a single vestige of any part of either ear, not even condescending to place a piece of cartilage that might represent the external ear or the Eustachian tube.

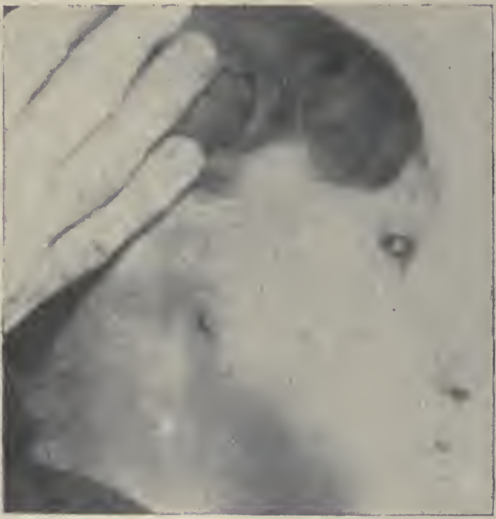

Figure 1.

Master C. is 12 years old, the seventh child from a father and mother in whom absolutely no consanguinity exists, and whose other six children are perfectly normal. Although hailing from a section of our state where deaf mutes are frequent, there exists in this family no such trace, as far back as the grand-parents. The parents were about 33 years of age at the birth of this boy, and the mother could not even find a superstitious reason to account for the peculiar anomaly.

Externally, the skin covering the lateral surface of the face and head is as smooth as can be imagined, the ramus of the jaw is normal, and there is simply a slight depression where the skin passes from the zygoma and ascending ramus of the jaw to the remnant of the mastoid. Even by palpation one can find no evidence of a pitting in the skull surface. The glenoid fossa, seemingly, is developed on the anterior face of the mastoid process; the right half of the body, face, arm, hand and lower extremity are larger than the left, and the corresponding slightly more prominent. In the naso-pharynx there is the same lack of evidence of development. Examination of this region was made, first, by the usual method of posterior rhinoscopy which revealed simply the presence of a moderate amount of adenoid tissue, no prominence of the Eustachian tube, no evidence of even an eminence, the lateral wall of the naso-pharynx being perfectly smooth, and of course no fossa of Rosenmueller. With a palate retractor and the Hays' pharyngoscope a beautiful view was obtained of the epi-pharynx but on neither side could we see any evidence of an Eustachian tube.

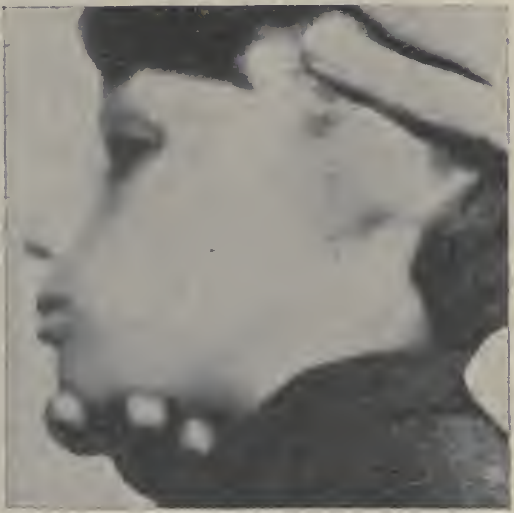

Figure 2.

The mother maintained that this patient would imitate chickens and cows, would dance with joy when the piano was played and would run to the river bank when the steamboats whistled. He gave absolutely no clue to hearing with the tuning-forks or with any form of extraneous noise I could devise to make. I felt, however, justified in exploring this region for a remnant of an ear, so a skin incision was made where the mastoid should have been. On peeling the periosteum away we found the temporo-maxillary joint instead of a canal, and behind this there was the smoother outer table that one sees on the squamous region of the temporal bone. The facial nerve came out of the skull just behind the neck of the maxillary articulation, without any evidence of a styloid process. The outer table was clipped off, and revealed diploca; so following Politizer's advice, it was decided not to proceed further. While the patient was still under the anesthetic, a careful digital examination of the naso-pharynx was made but we could feel no more than we saw.

The illustrations, unfortunately, are poor, being the efforts of a novice. The plates and prints are not retouched. The black dimple seen in Figure 2 is not a cavity or pit to represent the ear canal, but the space in shadow between the ramus of the jaw and the base of the rudimentary mastoid process. The skin over this region is very smooth and free from the slightest vestige of a remnant of an external ear.

I could develop no nystagmus by ethyl chlorid, an ice bag or hot poultices to the side of the head, nor could I elicit any reaction by the turning test. Unfortunately an x-ray was not made at the time of this observation, but from the above it would be safe to conclude that the internal ear shared the same fate as the external and middle portions.

Many reports have appeared in the various text-books and current literature dealing with various deformities and remnants of the hearing apparatus, but this is the only instance I am able to find where there is absolutely a complete absence ot the entire organ of hearing on both sides in the same individual, and it is because of this curiosity that it is reported.

624 Gravier Street.

Salvarsan in Otiatrics. J. LANG. *Deut. med. Wchnschr.*, No. 9, 1913.

In five cases of hereditary lues salvarsan was employed because of the continued disturbances in the hearing. One case remained unchanged; in one the improvement was temporary, two became worse, and one improved.
ED.

EDELMANN'S ACOUSTICS FOR OTOLOGISTS.*

DR. J. HOLINGER, CHICAGO.

When we stop to compare the clear optical principles on which the ophthalmologists base their therapy, with the indefinite knowledge of acoustics which we have at our disposal, a book like that of Edelmann on "Acoustics for Otologists" will be a welcome, or rather, a necessary addition to our library. Edelmann dedicates the book to the memory of Bezold, and I believe that a great deal of the criticism of Bezold's work would have been avoided if the principles of acoustics had been taken into consideration earlier. It was a great satisfaction to see how the unbiased American student at once grasped the importance of Bezold's teachings. Wherever there was reserve or opposition it was easy to trace the cause to influence from abroad. The German student, who, in his preparatory studies, is steeped in Latin and Greek, is and was ill-prepared for the mathematical and physical questions involved. Permit me to cite from literature one example of this kind. A certain German professor, in order to prove that the handle of an ordinary tuning-fork does not vibrate longitudinally while the prongs vibrate transversely, screwed the handle in a vise, and with the microscope watched some grains of lycopodium powder that he had poured on the stem. Of course, he did not see any longitudinal vibrations, for this reason: Suppose you want to study the wagging of a dog's tail, by taking hold of his tail with both hands. The consequence will be, if the dog does not bite you, that the tail will wag the dog. Yet this and a number of other equally absurd mistakes did not baffle the professor, but induced him to write a lot of unscientific general and indefinite criticisms which certainly hurt Bezold's feelings, but did not shake the logic of his deductions.

One reason for bringing this up here is the fact that a number of our American colleagues mistook the absence of an answer to many of these criticisms, and especially of an answer in the same offensive tenor, for an admission of the weakness of Bezold's arguments, whereas, it was simply the answer of a scientist and a gentleman. Whenever he considered an answer necessary in the interest of the cause, he gave it in a scientific, never in an aggressive manner. Another reason for mentioning this matter here is that it caused Edelmann to publish the proofs for his and Bezold's theory of vibration of tuning forks; so it's an ill wind, etc.

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*Read at the meeting of the Chicago Laryngological and Otological Society, December 19, 1911.

The first chapter of Edelmann's book explains the transverse and longitudinal progressing vibrations and the standing vibrations. The transverse progressing vibrations may be produced by striking a tight rope near one end, longitudinal progressing vibrations by letting a slightly stretched spiral spring snap back. The natural harmonics of the violin string are given as an example of standing longitudinal vibrations.

The next chapter explains a number of technical terms, and then shows how we can represent vibrations by drawings, and finally mentions the phonograph as the most accurate instrument for this purpose.

Then follows a discussion of clear tones, their strength, pitch and the interval between two tones, the gauging of a normal tuning fork, and finally the number of vibrations of the different sounds in Bezold's tone series.

The phenomenon of the interference of two simultaneous sounds is given in the following chapter. After this, the mechanism of the tuning fork is discussed. There are three kinds of tuning forks: (1) the simple horseshoe-shaped steel rod with the same rectangular section throughout; (2) the fork with the heavy mass of steel at its arch; (3) the fork with weights. Proofs that a symmetrically constructed fork must show longitudinal vibrations of the handle when the prongs vibrate transversely is given theoretically by constructive drawings, and practically by five different experiments. Considerable space has been given these points because they are of utmost importance in the Rinné and Weber-Schwabach tests. You have often heard the argument that in Rinné's test we compare things that cannot be compared, namely longitudinal vibrations of the handle with transverse vibrations of the prongs of the tuning-fork. Gentlemen, we compare the *time* of the vibrations and here you have the proof that the *time* of vibration of the handle is identical with the *time* of vibration of the prongs; as long as the prongs vibrate transversely the handle must vibrate longitudinally. The matter is very important and I wish to illustrate it by an example: Suppose there were a steam car-line and an electric car-line from here to Milwaukee, I know that the steam car takes exactly the same length of time to make a certain distance as the electric car does. Yet I find that the steam car always arrives in Milwaukee ahead of the electric car. Now then, doesn't that give me a right to draw the conclusion that the electric car-line either makes a detour, or makes more and longer stops. And in drawing this conclusion do I compare an electric car with a steam car? I do not think so, I only compare the time it takes them to get to Milwaukee. I might as well take two steam cars for the experiment, provided that the crew that runs over the tracks of the electric car has the same instructions as the crew on the electric car. At the end of this chapter proof is given that the transverse vibrations of the handle are due to asymmetry of the metal of the fork.

A very interesting chapter is devoted to the construction of tuning-forks free from overtones for the Rinné and Schwabach tests. It begins with a discussion of the production of overtones. It was through an accident that the possibility of eliminating them was discovered. Bezold had an "A" fork free from overtones which Edelmann with the best of machinery could not duplicate, although Bezold's fork was made by a simple locksmith and by hand. It seemed like the same problem as with the old Italian violins which cannot be imitated. The explanation came with the discovery of a tuning-fork that did not sound at all when held in the usual way, by the handle. Any fork when laid down so that both prongs and the handle are supported by two pieces of wood, will sound if struck in the middle. Edelmann calls this sound "Plattenton," because it is produced in the same way as that of a steel plate. If ths sound is accidentally the same as the sound of the prong unsupported, these two sounds kill each other since, according to Pisko, one sound is by resonance transformed into the other and then muffled by the hand. The fork is mute. This principle is used to eliminate the overtones. If this second sound is identical with the first and strongest overtone (usually the fifth of the fundamental tone of the prongs), we have a tuning-fork without weights which is for all practical purposes free from overtones. Such a fork will also sound a long time. Bezold's original "A" fork accidentally fulfilled this requirement.

The chapters on Bezold's series of tuning-forks offer no new feature for discussion here except that in the lowest forks where adventitious sounds are the most objectionable, the sound of the handle is eliminated by constructing the weights of the prongs asymetrically; thus excluding the possibility of a vibration of the handle. The gauging of the Galton whistle proved a very hard task, but was accomplished by means of Kundt's dust figures. The first whistles were not accurate and Edelmann freely admits this. He has constructed a new one. The chapter on Melde's sounding-plates and Koenig's rods I shall skip, as I think they are only theoretically important. The monochord produces longitudinal vibrations, and it seemed for a while as though it were destined to replace the Galton whistle in our hearing-tests of the highest sounds. But, according to Edelmann, it produces so many adventitious noises in the highest pitch, for which it is the most important, that its value there is questionable.

A chapter on a continuous series of resonators to increase the strength of the sounds and to differentiate the clear sounds is not of sufficient practical value to us here.

Of much greater value are the chapters on rational and objective measuring of the strength of sound and the possibilities of hearing. A general discussion on how to measure anything gives us an insight into principles otherwise foreign to us but in which Edelmann is authority, since I know that in his laboratories his specialty is the manufacture of the finest apparatus for measuring magnetism, electricity, etc. We, therefore, have to take his word for it if he tells us that an enormous apparatus is necessary for measuring the strength of a sound. The principle, in short, is this: a normal siren with a certain number of holes of a definite diameter is turned by a motor having a certain number of revolutions. A current of air is blown with a known pressure against the holes. On account of the extreme sensitiveness of the ear this pressure is often as small as .01 mm. of water. Therefore a special apparatus, a micrometer for air-pressure with mirror and telescope, had to be constructed to measure this pressure with an accuracy of .0001 mm. Edelmann took a series of measurements on his own ears and found that the ear is most sensitive to musical sounds, less so to the lowest sounds and to sounds above c3. The quantitative measurements with this accuracy have, of course, only scientific value, but they show the difficulties we have to face when we want to talk about accuracy. Edelmann proposes as the unit of sound that strength of sound which is created in a normal siren blown against with a current of air whose pressure equals the pressure of a column of water of .1 mm. in height. He calls this unit "Phon" (1 "Φ") and always adds in parenthesis the pitch of the tone measured. He takes the unit so small in order to avoid decimals. 1Φ is, of course, different for each pitch. 2Φ is not necessarily twice as strong or is not necessarily felt twice as strong as 1Φ. The laws of increase have to be studied first. While these instruments cannot be used directly, they are used for gauging handier instruments for practical use.

Edelmann offers gauged tuning-forks that are suspended from an elastic handle and have a contrivance which indicates the moment the prongs have attained a certain excursion. With a stop-watch we note the number of seconds from that moment till the patient does not hear the sound any more. The sound is conducted to the ear through a tube of a certain length and width. A table of figures accompanies each of these forks giving the number of phones of hearing corresponding to each second that has elapsed from the moment of the known excursion till the sound is no longer heard. This gives us figures by which we can not only make a comparison of our own results of hearing-tests made at different times, but can also compare them with the results of others. Of course, only the number of phones of the same pitch can be compared, but each fork has to be separately gauged, since the steel differs. It takes a series of these forks of different pitch to test the whole scale.

In order to measure the pressure with which an "A" fork is set on the vertex of a patient in the Weber-Schwabach test, Bruenings' handle is advised which indicates directly the pressure used. This seems to be a great advantage.

The last chapter treats of the construction and the use of a mechanically accurate model of the middle ear, enlarged twenty-two fold. It also serves to measure the proportion in which movements of the tympanic membrane are transmitted to the fluid of the labyrinth. Helmholtz felt the need of such a model. Politzer and Helmholtz began the study in detail of the movements of all parts, but it was Bezold who gave the logical explanation of the whole apparatus by showing that whenever any part of the whole mechanism is out of order, hearing for the lowest part of the sound scale is lost, while hearing of the upper octaves is little or not at all impaired. This changed the general question of the physiology of the whole apparatus, and brought forth the solution which is given at the end of the book and which appears just as clear and simple as it is surprising. In the study of the whole proposition it becomes evident that this solution could only be found by the happy combination of a careful observer and deep thinker such as Bezold with a practical physicist and eminent mathematician as Edelmann. I may say that the construction of this model was the greatest care of the last months or year of Bezold's life, and when Edelmann finally, after many unsuccessful attempts, succeeded and the result could be deducted, Bezold considered his life's work finished. From actual measurements and calculations it was found that movements of the handle of the hammer of 24° will cause movements of 1° on the foot-plate of the stirrup. The final paragraph of the book says: "The conclusion of all the foregoing considerations allows us to answer the question, in which ratio are vibrations of the tympanic membrane transmitted to the fluid in the labyrinth" in the following manner: "In the inverse ratio of the specific gravity of the vibrating media."

In closing, I wish to add that this work of Edelmann is a collection of papers that appeared in different journals. My paper was written with the object of drawing your attention to the book, and not giving a full account of its contents. A number of interesting facts I could not touch upon at all. This book is another stone of the building of modern otology, for which Bezold furnished the normal and pathologic physiology, Siebenmann the pathology.

64 Randolph Street.

Pyelitis and Otitis Media in Infants. F. GLASER and H. FLIESS, *Deut. med. Wchnschr.*, July 24, 1913.

Apropos of three cases the authors remark that otitis media very often accompanies or precedes pyelitis. When the fever continues it should be suspected even though there are no manifest symptoms. In a case of colon-bacillus pyelitis paracentesis resulted in cure.

ED.

Local Autogenous Temperature Variations a Cause of Labyrinthine Vertigo. E. P. FOWLER, *Med. Rec.*, June 21, 1913.

In a preliminary report on this intricate symptom the author offers a rather plausible explanation. The bony labyrinth walls are only relatively good conductors of heat and being surrounded by poorly conducting bone and tissues of high specific gravity it follows that they are quickly affected by changes in temperature. Portions of the static labyrinth are near the surface of the body, and it follows that localized inflammations, congestions or anemias may bring about variations in temperature and that these variations near the labyrinth will affect the flow of the endolymph and if of sufficient intensity will cause vertigo and other similarly produced phenomena. These conclusions are in accord with the author's clinical observations. A fuller report of the above investigations will appear in the future.

LEDERMAN.

CAVERNOUS SINUS THROMBOSIS: REPORT OF A CASE.

DR. RICHMOND MCKINNEY, MEMPHIS, TENN.

Mrs. McE., a resident of Memphis, aged 31, was seen by me October 5, 1912, in consultation with Dr. W. J. Wadlington. This history was obtained:

About a year ago she was treated by a local colleague for antrum trouble. The nasal wall was perforated and the antrum irrigated on several occasions. She was apparently relieved by this treatment. About four or five days ago, following a severe head-cold, she developed pain all over the right side of the face and above the right eye, accompanied by considerable swelling, and foul-smelling pus occasionally was discharged from the corresponding naris. Temperature course 100.5° to 103°. This morning the swelling was apparently somewhat less, but the pain was very severe, requiring morphia hypodermically.

I found Mrs. McE. to have considerable swelling of the tissues of the right cheek, above the antrum, and also above the right eye. The right upper lid was swollen to such an extent as to completely close the eye, and showed bluish congestion, indicating blood stasis. Her pulse was rapid, and temperature 100°. Pus was discharging from the right antrum. Pressure anywhere over the right side of the face and above the corresponding eye elicited complaint of pain from the patient.

The picture presented was typical of cavernous sinus thrombosis. The treatment consisted of an ice-pack continually applied, and 2 per cent cocain spray, and frequent irrigation of the right naris with warm satuated solution of boracic acid.

The temperature rose that afternoon to 103.5°, and the pain continued to be excruciating. Morphin hypodermically was freely used for relief of this. The next morning the temperature was down to 100.5°, but up again in the afternoon to 104°. Practically the same course was run the next day. When her temperature would rise she would be more or less delirious. Four days after I first saw her, Mrs. McE.'s temperature was normal, and she expressed herself as feeling better than she had at any time since the attack began—in fact, I may say that she was in a state of euphoria. A short while after I saw the patient, her temperature began to rise, and delirum rapidly developed with coma and death at 4.15 in the afternoon.

Cavernous sinus thrombosis is not at all a common condition, and is almost invariably fatal, the mortality in such cases being very high. Ballenger, in the last edition of his text-book, reports three cases, which he says is an unusually large number to come to the hands of one observer, as many clinicians engaged in nose, throat and ear work never see a case of this character. This will convey some idea of the rarity of the condition.

Memphis Trust Building.

Injurious Effects of Loud Noises on the Organ of Hearing.

HARRY FRIEDENWALD, *Bull. Med. and Chir. Fac. of Md.*, Jan., 1913.

Friedenwald reviews the various forms of profession deafness and details the changes which take place in the organ of Corti, experimentally found by submitting animals to various sounds for a number of hours daily. He concludes that since the injurious effect of loud noises, sudden or continuous, has been demonstrated by clinical experience and experimental study, the protection of the hearing demands the reduction of loud noises wherever possible.

ED.

Connection of the Sexual Apparatus with the Ear, Nose and Throat.

V. DABNEY, *N. Y. Med. Jour.*, March 15, 1913.

After discussing this subject very thoroughly and reporting eight interesting cases, Dabney concludes that there is a far greater connection than is supposed between the sexual apparatus and the ear, nose and throat. Cases escape diagnosis in whom this sexual element is the contributing, if not exciting cause of many of the common nasal and aural abnormalities of function, because of the lack of time and the difficulty in obtaining proper information.

ED.

UNUSUAL CASE OF MENIERE'S DISEASE ASSOCIATED WITH NEPHRITIS.

DR. A. L. GUTHRIE, LANCASTER, OHIO.

Patient, male, aged 43, of robust type; occupation, dentist. Family history negative. Previous History: Patient complained of a heavy feeling and soreness over kidneys for one year or more, which he attributed to being on his feet most of the day. Six months previous to present attack he noticed a general nervousness and insomnia. Urine has been diminished in quantity and concentrated for fully one year; habitual constipation since boyhood. On December 12, 1912, patient noticed that he would become dizzy when turning suddenly—either to right or left. This dizziness would only last a few seconds and no importance was given to it by the patient.

These attacks became more frequent and the vertigo more prolonged up to February 15, 1913, when he had a more severe attack of vertigo accompanied by nausea—according to the patient, this attack was caused by rising suddenly from a chair. Following the last-named date, he would become dizzy almost every day, upon sudden turning or stooping.

Present Attack: During the noonday meal on March 30, 1913, he developed a tinnitus aurium in the left ear similar to that experienced after taking quinin. This came on suddenly and became progressively worse during the meal. Before arising from the table he became dizzy and had some difficulty in leaving the table, after which he reclined in a Morris chair and during that afternoon any attempt to arise would cause a marked increase in the dizziness and tinnitus, and also some nausea. The same evening he vomited three or four times (accompanied by nausea and retching) which slightly relieved the dizziness. He was scarcely able to ascend to his bedchamber although assisted by his wife and son. Spent a very restless night; sleeping very little.

The following day I saw the patient for the first time. Upon examination I found the hearing in left ear practically nil—bone-condition no better than air-conduction. Both low and high registers equally impaired. Rinne and Weber tests negative. The membrana tympani was normal and the Eustachian tube permeable. Inflation had no effect upon the hearing, or upon the tinnitus which was very marked. Vertigo very pronounced; patient could not raise head from pillow without dizziness and nausea. Nystagmus only apparent when eyes were rotated to extreme right—chiefly horizontal in type. All other cranial nerves normal.

The following day all symptoms aggravated. Conjunctiva was highly injected, vision blurred, retina slightly inflamed. Urinalysis: Cloudy, amber, acid, Spc. gr. 1024. Hyaline and granular casts—large quantity of albumen.

The third day the general condition was worse. Pulse 110, hard and bounding; temperature 101°; respiration 22; patient very drowsy. The fourth day the patient was slightly improved; vision still blurred; aural symptoms the same; not so drowsy and memtally brighter. Each day following showed a gradual improvement, albumen disappearing in ten days. Ocular and aural symptoms gradually returned to normal. Patient able to leave bed in four weeks; in six weeks he was able to come to my office. At this time the hearing had greatly improved; the low registers being more appreciable than the high; tinnitus much reduced in severity. Vertigo only manifest when stooping or turning suddenly; no nystagmus present.

August 5, 1913: All aural symptoms have disappeared completely with the exception of a slight impairment of hearing (not more than 20 per cent impairment, high and low registers equally impaired).

The treatment was as follows: The first day I gave a saline purgative, pilocarpin hypodermatically, hot blankets, hot lemonade and plenty of water internally; milk diet. This was continued for three days when the pilocarpin was discontinued—the remainder of the treatment was continued until the albumen had disappeared. After three weeks I gave iodalbin 10 gr. t. i. d. for a period of three months.

I consider the case unusual as to premonitory symptoms, onset, and recovery, considering the severity of the attack.

Kirn Building.

UNTOWARD RESULTS FOLLOWING THE EXTERNAL OPERATION ON THE FRONTAL SINUS. A CRITICAL REVIEW OF TWENTY CASES.*

DR. ROSS HALL SKILLERN, PHILADELPHIA.

Less than two years have elapsed since Boenninghaus collaborated and published the unfortunate results of the Killian operation. He laid, however, especial stress upon the fatal terminations, and did not enter into the detail of those sequelae which were not dangerous, but could readily be of temporary annoyance and even actual permanent discomfort to the patient. It is these very end-results which I have the honor to bring before you for your consideration this afternoon, taken from all the cases which have come under my care. In each one of these the Killian procedure had been followed.

Before entering into individual cases, let us consider the untoward conditions which may follow the operative procedure: 1. Edema of eyelids, particularly the superior. 2. Paralysis of the upper lid. 3. Continuation of the discharge. 4. Fistula or abscess formation. 5. Hemi-cranial anesthesia. 6. Neuralgia: (*a*) local, (*b*) hemicranial. 7. Deformity: (*a*) sinking in of forehead, (*b*) contraction of scar, (*c*) falling out of eyebrows, (*d*) excessive growth of eyebrows, (*e*) excessive growth of scar-tissue (keloid). 8. Formation of pneumatocele. 9. Temporary and permanent diplopia. 10. Blindness on operated side.

1. *Edema of the Eyelids*: This occurred in every case, beginning from two to four days after the operation. The duration and extent of the edema depended upon the amount of bone-resection required for the inferior wall. Thus the more extensive the resection, the longer the duration of the edema. Pressure and traction upon the eyeball exercised no little influence upon the prompt appearance of the turgidity, as was exemplified in our earlier cases when the optical structures were subjected to more or less traumatism due to our imperfection of finer technic. Since using a specially designed eye protector, the subsequent edema has not appeared so promptly, neither has it been so well-marked nor persisted so long.

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*Read at the meeting of the International Congress of Medicine, Section on Laryngology, London, August 6, 1913.

As a general rule the edema appears at the end of the forty-eight hours, and reaches its greatest maximum on the fourth or fifth day. This gradually subsides, requiring often three or four weeks before the last traces disappear. Care should be taken not to confuse a partial ptosis with a persistent edema. Where considerable traumatism has occurred from the orbital retractor, the swelling appears on both the upper and lower lids, while the upper lid is alone affected from the supra-orbital incision, which has of course severed the main return-channels of the venous blood.

Pathological importance cannot be attributed to this edema unless it assumes such proportions as would lead one to believe breaking down and suppuration were imminent; such an eventuality, however, has not as yet come under our observation. In one case (with tubercular history) the edema has persisted, sometimes involving the entire forehead, but more often being confined to the upper eyelid of the operated side. Curiously enough, this edematous swelling is recurrent in type, one day practically disappearing only to suddenly reappear without any apparent cause. The possibilities of an angio-neurotic type might be considered in this connection.

2. *Paralysis of the upper lid*: Immediately after the operation this condition was always present, but as it co-existed with the edema it was difficult to judge whether it was due to trophic or mechanical disturbances. In only two cases did it show any disposition to become permanent. The ptosis here is not well-marked and does not include the entire lid, but only a portion of its internal edge.

3. *Continuation of the discharge*: The length of time the discharge continues from the affected nostril will depend largely upon the extent of the surgical intervention. Thus, if the frontal sinus be small, and only the anterior ethmoid cells co-affected, the purulent outflow will be practically *nil,* and entirely disappear at the end of two or three weeks. If, on the other hand, it has been necessary to completely eradicate the ethmoid labyrinth and resect the anterior sphenoidal wall as well, we can confidently expect a discharge for weeks and even months, which gradually diminishes both in amount and purulent consistency, until a thin serous or sero-purulent secretion remains. This appears to continue indefinitely, despite frequent applications of the various silver preparations, as has been observed in about 50 per cent of our cases.

It must be emphasized that the post-operative discharge can hardly be compared with the original condition, that it is at first the secretion from a wounded surface, and, even though it become semipurulent, stagnation is impossible, thereby eliminating the danger and previous discomfort to the patient.

4. *Fistula or abscess formation*: These may be classed as primary and secondary. Primary, those appearing before healing of the parts has occurred; secondary, those resulting from reinfection and appearing long after the external incision had healed. These happened in five of our cases. Two formed fistulas during the process of healing, and three became reinfected, which resulted in abscess-formation along the line of the original incision.

In the first case of primary fistula formation the sinus was very large, extending well up toward the vortex. During retraction the skin was torn, and a fistula formed below and above the ridge of bone. This necessitated packing with iodoform gauze, and the parts healed by granulation, the entire process requiring about one month.

The second occurred at the outer corner of the wound in a large sinus which extended to the maler bone, and was due to stagnation in this part. The insertion of iodoform gauze-drains soon brought about healing.

The three cases of abscess-formation occurred five weeks, eight months, and eleven months after operation. The first one was due to a piece of buried silkworm gut. No definite cause could be assigned to the others. It would appear that the longer the primary sutures are allowed to remain after the healing process has well begun, just that much more danger of subsequent infection with abscess formation.

Necrosis and breaking down of the ridge of bone has not occurred in any of our cases.

5. *Hemi-cranial anesthesia*: This form of neuroses occurred in every case, which was only to be expected, as the supra-orbital nerve had invariably been severed. The curious part was the difference in discomfort; in other words, the attitude of the different patients toward this condition. The complaints were limited entirely to the females, being described as a numb sensation, as though the part were dead. Sensation returned in every case, although the time of the establishment of the collateral nerve-function differed markedly. In the majority of instances, six months was sufficient, while in six cases certain areas of anesthesia are still present, and two of these belong to the earlier operations. There appears also to be some connection between the duration of the anesthesia and subsequent neuralgia. Thus in, I think, all of the cases in which

the hemi-cranial anesthesia was unduly prolonged, neuralgic manifestations always appeared subsequently.

6. *Neuralgia*: This is one of the most annoying sequelae that can follow operative intervention on the frontal sinus. Not only is the patient distressed, but the surgeon also, from the persistent importunities of the former to rid her of this continual pain. This is especially the case should neurasthenia be combined, as not infrequently appears in women, the sinus disease first causing the neurasthenia. Neuralgia or neuralgic manifestations were present in seven of our patients, but only in two were the symptoms sufficiently severe to demand surgical intervention. In one, despite resection of the nerve, the neuralgia recurred several weeks later.

It would appear as though several conditions may give rise to this neurosis. (1) The nerve endings becoming caught in and bound down by the scar. (3) Continuation of the original neuralgia which accompanied the sinus disease. (3) Neurasthenia. (4) Bulbar enlargement at end of nerve. It has been our observation, the more marked the deformity, the greater the neuralgic manifestations.

7. *Deformity*: The cosmetic result of the operation depends largely upon the size of the sinus, particularly the antero-posterior dimensions. Another very important factor is the method of healing which has taken place. If by first intention, the resulting scar is so slight that it becomes almost unnoticeable. If, for any reason, by granulation, the scar-tissue is very prominent, and by subsequent shrinking not only produces greater or lesser deformity, but also adds to the discomfort of the patient by embracing the terminal ends of the severed supra-orbital nerve. The scar is always more prominent from the inner end of the eyebrow downward along the side of the nose, while the depression is always found above the eyebrow toward the median line.

Our cases may be classified as follows: thirteen cases practically perfect, no scar or other defect recognizable unless special attention were called. Four cases, slight depression over operated eye, and some contraction of scar tissue along descending incision, this being due to subsequent reinfection. Result may be called very good.

In two cases the cosmetic result was not quite so good. In one the depression above the eye was marked, being due to an exceptionally high and deep sinus. This could have easily been corrected with paraffin, but the patient (a miner) was perfectly satisfied, and would not consider any further surgical treatment. In the other case there was no deformity, but an edema persisted, which gave the forehead a swollen shiny appearance. She also had reinfection along line of incision. This case has already been referred to.

One case showed considerable deformity, both from the depression as well as scar-tissue contraction. During the operation the skin was torn from too great retraction. Healing took place by third intention, a fistula beneath the bridge of the bone persisting for several weeks. Reinfection occurred several months afterward.

Present condition: Some sinking in of forehead; scar-tissue prominent, drawing skin for several centimeters. The entire condition is much better after several injections of paraffin, so that deformity is not particularly noticeable.

From the retrospect of our cases it is unwise to give a prognosis of the deformity immediately after the operation, as the parts will not assume their permanent position until several months have elapsed.

8. *Formation of pneumatocele*: In two cases we noted a bulging over the anterior wall on blowing the nose, on the first dressing. After compression with tight bandage this disappeared. In none of the cases was this visible after the bandages were permanently removed.

9. *Temporary and permanent diplopia*: In fourteen of the cases double vision was present immediately after the first bandage was removed. This lasted a variable length of time, but in the majority of instances disappeared in a few days. Thus in eleven the diplopia had completely disappeared at the end of the first month. In one case it lasted for nearly four months, and in two cases it appeared permanent. These were Case 5 and Case 15, both young girls, in whom the sinuses were not especially large. In Case 5 the diplopia first appeared some two weeks after the operation and became more marked rather than diminishing as time elapsed. In the other case, double vision appeared on removal of the first dressing, and has persisted. The ocular disturbances in the first case can be explained when one takes into consideration its delayed appearance. During the process of healing the trochlea became involved in the new-forming scar-tissue, and became anchored, as it were, with resulting loss of function. The cause of the diplopia of the second case is not clear, but it would seem as though hysteria played a not inconsiderable role, as at first it was not only binocular but monocular as well. Repeated examinations failed to reveal the cause of this curious condition. After several weeks the monocular diplopia

disappeared, but the binocular persists even to the present time, (operation April 28, 1911).

In both of these cases the diplopia was counteracted by the wearing of appropriate lenses, and it would seem that the visual disturbance is also improved, although on removing the glasses the double vision (two years and one year after operation) is still marked.

10. *Blindness on operated side*: This unfortunate sequelae occurred in Case 16, curiously enough one of our later operations in which our technic was established. The disease involved the frontal, entire ethmoid and sphenoid on the right side, and complete exenteration of these parts was demanded. The operation progressed as usual, offering no especial difficulties, and it was not until the first dressing was removed and the patient tested for diplopia, that it was discovered that the eye was sightless. The eye ground was gone over immediately by an experienced ophthalmologist, who reported absolutely negative findings except pupil did not react to light. Despite every endeavor, the eye remained blind. In reviewing this case several possibilities may be advanced. First, in breaking away the lamina papyracea the bone may have been fractured into the optic foramen. Second, the optic nerve may have become surrounded by an extravasation of blood, which became organized. Third, a dehiscence may have existed in the sphenoid sinus and optic nerve sheath, injured while opening this sinus. The latter explanation seems the most plausible. It is interesting to note that this occurrence has been reported twice previously.*

Case 1: Agnes McA., 28 years old; operation, complete Killian, June 25, 1909, Polyclinic Hospital. Severe supra-orbital headache, impossible to concentrate thoughts or study. Purulent fetid discharge from right nostril, three years. 1. Six or seven weeks. 2. Several weeks ptosis. 3. Five or six weeks. 4. Stitch abscess one week after operation. 5. Eighteen months gradually disappeared. 6. Slight supra-orbital; several months. 7. (*a*) slight depression; (*c*) yes, but returned. 8. Four to five weeks after operation. 9. None. 10. None.

Case 2: Mary W., 50 years old; operation, Killian, November 18, 1910, Rush Hospital. Increasing frontal pain, great tenderness over frontal sinus; purulent fetid discharge from nose over two years. 1. Disappeared in few days. 2. None. 3. Several months;

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*Knapp. Cecite consecutive a l'operation d'une emphyseme du sinus frontal. Annal d'ocul., p. 67, 1901. Freudenthal: Nouvele contribution a l'operation radicale de la sinusite frontale. Arch. Internat. de Laryng. Vol. 20, p. 761, 1905.

exacerbation with every fresh cold. 4. None. 5. Several months, somewhat annoying. 6. Slight neuralgia on exposure to cold or wet. 7. None; result perfect. 8. None. 9. Evanescent. 10. None.

Case 3: Grace P., 29 years old; operation, Killian, December 15, 1910, Rush Hospital. Chronic frontal sinusitis; pain and discharge; small sinus; about one year; complete cure. 1. Several days. 2. None. Several weeks. 4. None. 5. Slight, not complained of. 6. None. 7. None. 8. None. 9. None. 10. None.

Case 4: James B., 40 years old; operation, Killian, March 7, 1911, Rush Hospital. Chronic frontal sinusitis; discharge fetid; headaches violent; several years; cured. 1. About three weeks. 2. Slight; evanescent. 3. Gradually ceased after several months. 4. None. 5. Not complained of. 6. None. 7. Slight, due to sinking in. 8. None. 9. None. 10. None.

Case 5: Sadie McS., 21 years old; operation, complete Killian, April 28, 1911, Rush Hospital. Continual left supra-orbital headache; profuse purulent discharge from nose, also from post-nasal; gradually worse over a year; complete relief. 1. Lasted three months; now entirely gone. 2. No. 3. Two weeks; becomes affected with coryza. 4. No. 5. Almost one year. 6. Super-sensitiveness; now about the same. 7. (*a*) Slight flatness; (*b*) slightly visible; (*c*) none; (*d*) no; (*e*) no. 8. No. 9. Two weeks after operation; still in lower field; gradually getting better. 10. No.

Case 6: Mrs. J. H. C., 46 years old; operation, Killian, May 18, 1911, Rush Hospital. Severe headache and tenseness in right side of head and face; dizziness marked; copious discharge from right nostril; one year; instant relief. 1. Two or three weeks. 2. None. 3. Four or five months. 4. None. 5. Nine or ten months. 6. Over site of scar. 7. None; cosmetic result perfect. 8. None. 9. None (never appeared). 10. None.

Case 7: Ida L., operation, Killian, August 22, 1911, Rush Hospital. Continual colds, gradually becoming worse; supra-orbital pain, unilateral; nasal discharge; discharged cured. 1. Almost disappeared at time of discharge. 2. None. 3. No data available. 4. None. 5. No data available. 6. No data available. 7. No data available; none at time of discharge. 8. None. 9. Had disappeared. 10. None.

Case 8: Elizabeth McW., 26 years old; operation, Killian, September 8, 1911, Rush hospital. Intermittent supra-orbital headache; inability to work; pus from nose; impossible to use eyes for sewing, etc.; nearly two years; great relief. 1. Six or eight months; still slightly noticeable. 2. No. 3. Intermittent to present. 4. Abscess, December 18, 1912; swelling and tenderness along line of supra-orbital incision; intra-nasal treatment; sudden discharge of large quantity of fetid pus (12/23); recovery. 5. None. 6. Anesthesia for several weeks. 7. (*a*) none; (*b*) none; (*c*) none; (*d*) none; (*e*) slightly visible. 8. No. 9. None 10. None.

Case 9: Frances K., 31 years old; operation, complete Killian, November 10, 1911, Medico-Chirurgical Hospital. Continual and excessive headaches and purulent fetid discharge from nose. Stenosis of lacrimal duct; lacrimatine; twelve years. Absolute relief until August, 1912; contracted grippal cold; nose began to discharge, not so profusely nor fetid. Some return of headaches, not so severe, but resembling; trifle neuralgia over scar; depression in forehead; reinfection of remains of ethmoid cells and sphenoid; operation ethmoid, January 21, 1913, and result good; paraffin injection January 28, 1913. 1. One month. 2. Three or four months before drooping disappeared. 3. Still slight; inclined to crust; some bother (due to ethmoid). 4. None. 5. Six to eight months. 6. Slight local; several months; never at any time very severe. 7 (*a*) Yes, quite noticeable; remedied by paraffin, January, 1913, which also cured anesthesia. 8. No. 9. No. 10. No.

Case 11: H. A., 20 years old; operation, complete Killian, February 6, 1912, Medico-Chirurgical Hospital. Sudden exophthalmos, with fever 104°. Great pain and protraction; no discharge. 1. Several months. 2. Difficult to determine, on account of edema. 3. Several months. 4. Eight months. 5. Not complained of. 6. None. 7. None, except in soft parts. 8. None. 9. None. 10. None.

Case 12: P. C., 40 years old; operation, complete Killian, March 23, 1912, Medico-Chirurgical Hospital. Severe pains over frontal for several years; gradually becoming worse; no tenderness over frontal; purulent discharge from nose since attack of grip over one year previous; operation, March 23, 1912; enormous sinus filled with pus and granulations; frontal wall partly necrotic; present condition, patient entirely well; considerable sinking in. 1. Disappeared in few days. 2. None. 3. No data available. 4. None. 5. No data available. 6. No data available. 7. Considerable flattening. 8. None. 9. None. 10. None.

Case 13: Jennie A., 31 years old; operation, Killian, May 15, 1912, Rush Hospital. Severe frontal headache, practically continuous, extended to temporal and occipital regions; profuse purulent discharge from nose; marked indigestion and sore throat; twelve years' tubercular history; absolute relief from headaches;

some slight discharge from nose remaining; November 23, 1912, reinfection swelling over scar, with pain, abscess. Present time, intermittent neuralgia like sudden sting of bee, gradually abating; worse in bad weather; still some discharge from nose; sore throat and indigestion disappeared; April 9, complains of drawing in scar tissue. 1. Intermittent; when present extends upward to forehead. 2. Very slight. 3. Still present, though not so profuse. 4. Has occurred three times along line of perpendicular incision. 5. Present. 6. Present. 7. Slight contraction of scar-tissue. 8. None. 9. None. 10. None.

Case 14: Mary R., 50 years old; Killian operation, anterior and posterior ethmoid and sphenoid, June 12, 1912, Medico-Chirurgical Hospital. Constant pain in supra-orbital region and parietal; feeling as though something was loose in head; some purulent discharge from nose; several years; during operation skin torn; fistula above and below bridge healed in two weeks, leaving depressed scar; five weeks after operation began to feel drawing sensation about one inch above scar; developed into true neuralgia; intermittent attacks; begins about 8 a. m., one hour, then about 4 p. m.; almost unbearable January 4, 1913, paraffin injected; cosmetic result good; neuralgia better. January 13, alcohol injections; no result. 1. Several months. 2. No droop. 3. Still present. 4. None after healing. 5. Several months followed by 6. Stinging sensations, sometimes darting. 7. Considerable sinking. 8. None. 9. Lasted seven months. 10. None.

Case 15: Bessie S., 22 years old; Killian complete, July 22, 1912, Medico-Chirurgical Hospital. Severe headache over left supra-orbital region; discharge from nose and into throat; dizziness on stooping; could not use eyes for work; kakosmia; sore throat; several months; great relief. 1. About nine weeks. 2. Partial several months. 3. Continues, thinner, no crusting, not so profuse; uses five handkerchiefs daily. 4. No. 5. Six months or so; still anesthesia immediately above scar-tissue. 6. No. 7. None; result excellent. 8. No. 9. Diplopia in all fields except to right.* 10. No.

Case 16: Jane A., 31 years old; Killian, December 11, 1912, Medico-Chirurgical Hospital. Severe supra-orbital pain and profuse discharge; for past ten years gradually growing worse; general system affected; patient anemic; sleeps badly, no appetite; loss of weight and strength, coughs, etc. Immediately after operation patient complains of blindness in right eye; absolute relief of headaches, and discharge thin and scanty; some new pain in eyeball and temple; sight never returned, and at present patient still blind on right side. 1. About six weeks. 2. Still slight droop. 3. Exacerbates on exposure to cold or wet. 4. None. 5. Marked. 6. Darting pains through eyeball and temple. 7. None. 8. None. 9. None. 10. Complete.

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*Since this report was read this patient was operated upon October 2, 1913, by Dr. Norman Risley who performed a tenotomy of the left superior rectus with resulting absolute fused binocular vision.

Case 17: Charles L., 62 years old; Killian operation, December 18, 1912, Medico-Chirurgical Hospital. Large mucocele of left frontal sinus; several years; complete cure. 1. Several months. 2. Very slight ptosis. 3. Two or three weeks. 4. None. 5. Not complained of. 6. None. 7. (*a*) Slight. 8. None. 9. Present before operation; not now. 10. None.

Case 18: Alice G., 32 years old; Killian complete, January 29, 1913, Medico-Chirurgical Hospital. Pain in frontal sinus and left eye; gradual exophthalmos; edema of eyelid; no discharge from nose; ethmoid cells polypoid and degenerated; sphenoid also; mucosa thickened; sight almost gone. 1. Still present. 2. Great ptosis. 3. No discharge. 4. None. 5. Not complained of. 6. None. 7. None. 8. None. 9. Eyesight almost gone; no better. 10. Was almost blind before operation.

Case 19: F. E. L., 41 years old, April 22, 1913. Patient in accident; injured in automobile; Medico-Chirurgical Hospital. Left frontal sinus crushed in with subsequent reinfection; necrosis of anterior wall with fistula formation; over one year. 1. Slight; soon disappeared. 2. None. 3. None. 4. Healed. 5. Not complained of. 6. None. 7. Marked depression. 8. None. 9. None. 10. None.

Case 20: Elberta L., 18 years old; operation, April 19, 1913, Medico-Chirurgical Hospital; healing by first intention. Continual and excessive headaches and purulent discharge from left side for one year; absolute relief from pain; discharge gradually ceasing May 17; anesthesia frontal and parietal; some tenderness in scar; no visible depression; slight edema of left eyelid; diplopia set in one week after operation; everywhere except to left; now very much better. 1. About ten weeks. 2. None. 3. Still present at end of twelve weeks, though greatly lessened. 4. None. 5. Present. 6. (*a*) Some tenderness in scar. 7. Vertical scar prominent; no depression. 8. None. 9. On certain positions of head diplopia. 10. None.

2032 Chestnut Street.

EMPYEMA OF THE FRONTAL SINUS WITH EXPOSED DURA CURED BY OBLITERATION OF THE SINUS.*

DR. THOMAS CHEW WORTHINGTON, BALTIMORE.

On September 19, 1911, the patient gave the following history: M. G., male, white, aged 35 years. He has had trouble with his nose as long as he can remember, viz: difficult nasal respiration, especially on the right side, with a great amount of mucus from the nose and from the naso-pharynx. From about July 1, 1911, he has had attacks of vertigo, especially when on the street. At times he would have to stop and hold his head. About July 15, 1911, he began to have severe pain over the right eye. Both eyelids as well as the surrounding tissue began to swell. On August 1, 1911, he was operated upon in a hospital, by having a piece of flesh taken from the right nostril. No improvement.

On August 8, 1911, he was again admitted to the same hospital, and under ether an operation was done over the right eye by a general surgeon. This reduced the swelling. He remained in the hospital for two weeks when he returned to his home wearing a bandage. In one week's time the upper lid began to swell once more. On September 7, 1911, he was again admitted to the same hospital, and the wound was reopened. He remained in the hospital one week and returned to his home still wearing the bandage. Yesterday, September 19, 1911, or just forty-two days from the first operation, he again began to suffer pain. This became aggravated last night. This morning he went to Dr. Harry Friedenwald's office because he could not open his right eye. The patient was referred to me by Dr. Friedenwald, as one of frontal sinus disease.

Conditions found September 19, 1911: The right upper eyelid is closed by inflammatory edema. This extends from the brow to the root of the nose. There is a fistulous opening near the inner canthus, which is discharging pus. Just at the middle of the eyebrow (or external to the supra-orbital foramen) is a small opening which connects with the frontal sinus. This opening is closed by a narrow piece of gauze three inches long. Upon its withdrawal, pus escapes freely from the sinus. The right nasal chamber is filled with large mucous polyps. There is no discharge of any sort to be seen anteriorly. The post-nasal fossa and the pharyngeal wall are covered with a thick purulent exudate. The patient complains of great pain about the eye and over the forehead. He has the appearance of serious illness.

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*Read and patient presented before Section on Laryngology of the Baltimore Medical Society, January 24, 1913.

September 20, 1911: Radical operation at the Baltimore Eye, Ear and Throat Hospital. Ether anesthesia. After removal of the nasal polyps it was found that the ethmoidal cells had already been largely destroyed by disease.

The sphenoidal cell and the maxillary sinus of the right side were opened, and drainage was established. Both of these sinuses were diseased. The frontal sinus was now opened into through the nose by the use of my angular frontal sinus curette. A discharge of thick pus from the frontal sinus followed the withdrawal of the instrument. The nasal cavity was wiped out as clean as possible and packed tightly with gauze saturated with twenty per cent argyrol solution. (The douche was not used.)

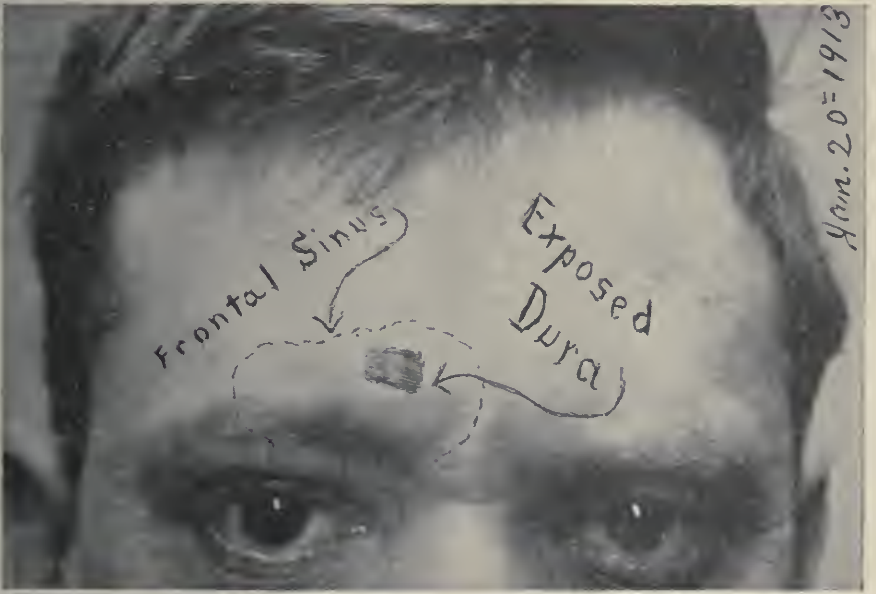
The external frontal sinus operation was begun by the usual incision carried along through the eyebrow and curving downward over the nasal bone. In this case the incision began where the previous incision had ended, which was at the extreme outer limit of the frontal sinus.

A sufficiently wide opening was made in the entire length of the frontal sinus for inspection and for treatment. This opening included the removal of a part of the nasal process of the superior maxillary bone and a few high ethmoidal cells.

The frontal sinus was filled with firm and tough granulations, evidently of long standing. The sinus had drained itself through the opening which I had just made intra-nasally, and it contained very little pus. It was found that the floor of the frontal sinus had broken down, that a part of the orbital plate and of the lacrimal bone had been destroyed, and that the sinus had been draining through the fistulous opening near the inner canthus.

The frontal sinus was cleared completely, leaving the bone clean and white and with a large passage into the nose. Near the upper margin of the posterior wall of the frontal sinus the dura was exposed. (See illustration.) The dura could be both seen and felt through an irregular necrotic opening in the sinus wall. The size of this opening was ¼ inch by ½ inch in length. The dura was covered with smaller and softer granulations than those which covered the sinus wall. The dural granulations were left untouched. The frontal sinus was now packed closely (not tightly) with 20 per cent sol. argyrol gauze. An end of the gauze was passed into the nose. The edges of the periosteal covering of the lower part of the wound were approximated as nearly as possible, and the skin-wound was brought together by interrupted sutures. This left more than an inch opening for the treatment and obliteration of the frontal sinus. Fresh argyrol gauze was packed loosely into the nasal cavity. This completed the operation.

In twenty-four hours the nasal dressing was removed. The douche was now used very carefully in the lower part of the nose only. In five days the gauze was removed from the frontal sinus through the nose. The sinus was perfectly clean and was immediately repacked with argyrol gauze. The nasal cavity was at this time well douched with a weak permanganate solution. The frontal sinus was repacked every four or five days but was not irrigated during the entire treatment. The sphenoidal and maxillary sinuses were douched daily and were soon well. Plain sterile gauze was now substituted for the argyrol gauze in the frontal sinus. It soon became impossible to pass the gauze from the frontal sinus into the nose. By October 31, 1911, the frontal sinus was well covered with granulations. On January 2, 1912, the sinus was so small that it could hold but the smallest bit of gauze.



Case of Mr. M. G. Obliteration of frontal sinus.

By January 23, 1912, the frontal sinus was obliterated and the wound had healed, making a period of exactly 125 days after the radical operation on September 20, 1911. At no time after the radical operation until the discharge of the patient was there any evidence of infection or of contamination of the frontal sinus. (The frontal sinus contained no exudate of any character during this period).

The obliteration of the frontal sinus is the result sought for in every operation done for disease of this cavity. Where possible, the frontal sinus should be closed at the time of operation, to save the patient from annoyance of long after-treatment and for cosmetic reasons as well. In this case the open treatment of the sinus was the only proper surgical procedure. It insured against "dead spaces" left within the cavity, and thereby against recurrences, and involvement of the dura mater. It is interesting to note that while there was no effort made for cosmetic effect, yet the deformity is not very noticeable. (See photograph taken January 20, 1913.)

I would call special attention to the fact that nasal irrigation was not used at the time of operation, because it is impossible under these conditions to know that the irrigating fluid will not enter the orbital cavity. This accident has occurred and will usually result in orbital cellulitis with impairment of vision, and may result in the loss of an eye. And for this reason the nasal cavity should not be douched directly after an ethmoidal operation.

It is difficult to determine the frequency with which necrosis of the posterior wall of the frontal sinus occurs. The same condition is found in the horizontal and cribriform plates of the ethmoidal bone as well as in the orbital plate, much oftener than is generally supposed. These complications are not in themselves serious when recognized in time. Unfortunately they are seldom reported.

Conclusion: This case illustrates very forcibly the necessity for the thorough and radical treatment of nasal accessory sinus disease. The repeated small external openings made in the diseased frontal sinus failed to effect a cure or even to relieve the symptoms of pus retention. It was only after the complete opening of the frontal sinus, together with the establishment of free drainage of the other diseased sinuses within the nose and careful after-treatment, that eradication of the frontal sinus was brought about, and with it entire relief of a disease of many years standing.

Although the dura mater must have been exposed for some time, and under the most unfavorable conditions, yet until the frontal sinus was opened this complication was not even suspected. Notwithstanding its exposure by necrosis of the frontal bone the dura had remained healthy and there were no symptoms attributable to this condition.

On this date, January 24, 1913, a year after the end of treatment, I find the patient well, and with no evidence of disease of the nasal accessory sinuses.

1022 Madison Avenue.

Some Remote Effects of Chronic Sinus Suppuration. R. C. Lynch, *New Orleans Med. and Surg. Jour.*, July, 1913.

A patient suffering from recurrent stiff neck, trapezius myalgia, inter-vertebral disk inflammation, mild arthritis of the shoulder joint, and then a rather severe attack of arthritis of the right knee was relieved by a radical operation for maxillary empyema. A woman, having evening temperature of 102° to 103° associated with slight cough (reflex) and progressive emaciation, was cured by correcting a chronic infection. A case of reflex asthma relieved by operation for chronic ethmoiditis. Scheppegrell.

Surgical Aspects of Goiter. Urban Maes, *New Orleans Med. and Surg. Jour.*, July, 1913.

In the prophylactic control of hemorrhage, one vessel, preferably the superior thyroid or its anterior branch, must be spared to keep up the blood-supply of the gland. This same rule applies when we are using the ligature only in the treatment of hyperthyroidism. Better control is secured by ligating the inferior thyroid vessels if only one set is to be secured.. The arteries are best ligated first, so as to allow the veins to empty themselves before the ligature is applied to them. Preserve the isthmus on account of the collateral blood-supply in case all the vessels of a lobe require ligature. Final hemostasis is secured by a fine cat-gut suture of the raw surface left after the cuneiform excision. Scheppegrell.

NERVE TRUNK ANESTHESIA AND CARBOLIZATION IN NASAL SURGERY.*

DR. GREENFIELD SLUDER, ST. LOUIS.

Nasal surgery presents two features that have surely engaged the attention of every nasal surgeon, i. e., anesthesia and reaction. It is relative to these considerations that I should like to narrate my experiences of the past three years, and call attention to what I believe to be an advantageous practice relating to both.

In all the more extensive surgical procedures in the nose the use of sufficient cocain raises the question of drug intoxication with its drawbacks. Three years ago I began the cocainization of the spheno-palatine ganglion (from which comes the entire sensory nerve-supply of the nose save the upper anterior part which is supplied by the internal nasal nerve), as a procedure for post-nasal surgical anesthesia. A short time later I began a similar practice with the internal nasal nerve, and a combination of these for all the severer bone surgery of the lateral wall. This practice has been exceedingly satisfactory in my hands—giving practically ideal anesthesia with a minimum of drug and so avoiding its poison-manifestations almost altogether. I know, however, that there are patients so susceptible to cocain and *all of its allied products*—local anesthetics sold by various names—that no local anesthetic so far known to me (quinine and urea has not been satisfactory in my experience), can be totally exempt from toxic properties. According to my understanding of Cushney's text[4] they are all chemical cousins as it were—cocain being the most potent but also the most toxic. And my experience has been that the rhinologist who has skillfully mastered the management of cocain as a surface anesthetic secures better results by its use than by the use of any other drug. It is along this line of argument that my present practice was developed. This consists in placing a very small applicator bearing one drop (½ minim) saturated solution cocain muriate (90 per cent) directly under the posterior tip of the middle turbinate and allowing it to remain fifteen minutes. I have cited this method of cocainizing the spheno-palatine ganglion several times.[1] It is faultless, according to my experience. Eight minutes after the setting of the applicator for the ganglion I set the applicator for the internal nasal nerve. For this purpose I use a smaller one which will carry only one-half drop; and I again use saturated solution cocain muriate. This is applied to the uppermost anterior aspect of the nasal fossa. The small applicator is introduced into nose in an upward direction. It very soon meets the anterior limit of the nasal fossa and then follows automatically to the angle of junction of the upper and anterior lines. It is at this point that the internal nasal nerve enters the nasal fossa. This nerve being more superficial requires less cocain and less time for anesthesia. Both applicators are removed simultaneously when one has been fifteen and the other seven minutes in position. The anesthesia thus produced in my experience gives more than a half hour's time for the performance of the most comprehensive bone surgery of the lateral wall. (My modification of the Mikulicz antrum operation among others.)[2] Anesthesia for all the surgery of the septum has always, in my experience, been very much easier, and satisfactory, in its performance, by simple painting with small amounts of cocain. For this reason I have never employed this method for the septum; but I see no reason why it should not be equally successful, applied, of course, in both nostrils.

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*Read before the Saint Louis Medical Society, Section on Oto-Laryngology, April 30, 1913.

I am fully aware that nerve-trunk anesthesia has been practiced by others over a period of several years. But as far as I am aware it has always been done by an attempt at submucous injection of cocain (or some other local anesthetic) into the nerve trunks, which is infinitely more troublesome and difficult than this surface application just described.

In addition to this and along the same line, I have resorted to nerve-trunk "blocking" using 5 per cent phenol in 95 per cent alcohol for this purpose injected by means of a straight needle used both for the internal nasal nerve and the spheno-palatine ganglion. For the former the attempt is made to locate the groove through which the internal nasal nerve enters the nose. For the latter it is introduced under the posterior tip of the middle turbinate in a direction backward, upward and slightly outward, and is introduced by measurement ⅔ cm. from its point of contact. I have shown this to be a trustworthy means of reaching the ganglion.[3] One-half ccm. of the solution is then injected. The result of these applications successfully made is a well-marked analgesia for which I want five to seven days. I prefer to wait until the reaction of the injection is over. There is anesthesia also but what I desire is the analgesia. In my experience this prevents to a very marked degree the shock of the larger operations at the time of their performance and the "reaction" that may be very severe in "sensitive" patients. I have on two occasions done a high turbinectomy with a Hajek radical post-ethmoidal-sphenoidal operation and a general removal of the nasal wall of the ethmoid after such nerve blocking without the use of any additional anesthetic. But the use of a small drop of cocain (90 per cent) to the spheno-palatin ganglion and about ¼ drop to the anterior nasal nerve in addition to the "blocking" is so much more satisfactory, giving usually *absolute* anesthesia, that I feel that the former practice is not to be recommended except in very specialized cases. I say this because, according to my experience, *absolute* paralysis by "blocking" with phenol-alcohol in *these* parts is not the rule. It is usually a well-marked parasis; but not a total paralysis. The addition of the very small amount of cocain, however, then makes it complete.

In the performance of the Hajek radical post-ethmoidal-sphenoidal operation the large nerve-trunks are necessarily encountered to a greater or lesser extent as they enter through the spheno-palatine foramen. And the more so is this true, as the cut extends downward and outward and forward. It seems to me that this extension is necessary to give it "radical" qualities. In my experience, the shock of this operation increases directly in proportion as this extension is made.

Carbolic acid added to the alcohol prevents much, if not all of the pain of alcohol when injected; and the analgesia that follows seems to me much more and of longer duration, when carbolic acid has been added.

In the Hajek radical post-ethmoidal sphenoidal operation the large blood-vessels of the posterior supply of the nose are likewise of necessity encountered. For this reason it has seemed to me wise to pack after *this* operation whether the surgeon's prejudices be for or against packing in other nasal operations. And I feel that a pack in this district is worse than useless unless it be *really* tight and trustworthy. It is my practice to place accurately a double thickness of the Simpson -Berneys' sponge splint which has been perforated and tied together by a heavy silk ligature. (The ligature makes its withdrawal easy and sure.) Such a mass of compressed cotton when swelled by the wetting of blood and serum will measure 1½ ccm. or more in thickness. In my experience the tolerance of this plug is extremely trying for the patient who has not been "blocked." For him who has been satisfactorily "blocked" it may become sufficiently uncomfortable but will not sap his strength as much as it does in the man who has not been "blocked." (I should estimate it about one-tenth as debilitating.) And to my mind this is equal in value, to the patient, to the escape from the primary shock. In fact, this "reaction" has often been much the worse of the two.

I am aware that a simple opening of the sphenoid may be done with little shock, or a post-ethmoidal cell may also be opened at the same time and still produce little shock.

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4. Text-book of Pharmacology and Therapeutics by A. R. Cushney, Lea and Febiger, 1911, Philadelphia, page 316.

3542 Washington Avenue.

The Nose and Throat. E. DANZIGER, *N. Y. Med. Jour.*, April 19, 1913.

The author discusses the diagnosis and treatment of (1) abnormal development of structures; (2) acute and chronic inflammations of the mucous membranes due to metabolic conditions; and (3) neurosis (vaso-motor disturbances, anomalous sensations, or paresthesias). ED.

Cause of Perforation of the Nasal Septum. W. B. CHAMBERLIN, *O. State Med. Jour.*, April, 1913.

The author discusses the following causes of perforations and thus localizes them: Syphilis of the septum involves primarily the bone, occasionally the cartilage, but hardly ever the cartilage alone. Tuberculosis involves primarily the cartilage, the bone secondarily if the progress is unchecked. Perforating ulcer involves only the cartilage, never the bone. Traumatic perforation from operative interference may involve any portion of septum. ED.

INTRA-TRACHEAL ANESTHESIA FROM THE STANDPOINT OF THE NOSE, THROAT AND ORAL SURGEON WITH A DESCRIPTION OF A NEW INSTRUMENT FOR CATHETERIZING THE TRACHEA.*

DR. HENRY H. JANEWAY, NEW YORK CITY.

The satisfactory manner in which intra-tracheal anesthesia for operations in the nasal, oral or laryngeal regions or even within the trachea or bronchi meets the requirements demanded during such operations is deserving of special comment. The very multiplicity of methods of administering an anesthetic during nose and throat operations testifies to the presence of dissatisfaction with most of the methods in common use. This dissatisfaction is most apparent in the usual methods of anesthesia in which the anesthetic is inhaled from a cone. Under such conditions the surgeon can operate only during the intervals when the cone is removed. The anesthesia can never be a smooth one, but is characterized by periods of more or less profound coma alternating with periods of partial return to consciousness. During the latter, there is often more or less struggling and, perhaps, coughing or retching. Often the operation must be discontinued at very critical periods, at times for instance, when the hemorrhage may not be entirely controlled. Operating under such conditions greatly increases the dangers and risks, and unnecessarily prolongs the operation. The difficulty of preventing the inhalation of blood and mucus is great, and constant care and attention is necessary in order to prevent such a complication. When the patients are profoundly anesthetized asphyxia from the falling back of the tongue is frequently troublesome. Lane of London, who formerly used this method in connection with his cleft palate operations, has well remarked that anesthesia for oral operations demands the services of an expert anesthetist and one, preferably, who is accustomed to work with the operator.

A more useful method is intra-nasal or pharyngeal anesthesia. By this method the ether vapor may be conveyed to the patient through glass bulbs fitted into the anterior nares or by means of a catheter passing to the pharynx through the nose. Both these methods are much more satisfactory than the preceding. Their use permits of a more even anesthesia and, especially when the catheter is used through the nose, of a much greater ease in preventing inhalation of mucous or blood. Neither method, however, is entirely satisfactory in this last respect. The blood and mucus within the mouth must be constantly sponged or sucked out, the head must be kept well thrown back and frequently trouble is experienced because of the falling back of the tongue.

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*From the Department of Experimental Surgery of New York University and Bellevue Hospital Medical College.

Many surgeons have resorted to rectal anesthesia in order to avoid the inconvenience of the proximity of the anesthetist and his apparatus during operation about the head. Rectal anesthesia, however, has never come into general use. Perhaps this is an unfair argument to use against it. Its administration, nevertheless, requires considerable skill and accurate dosage by it is somewhat difficult. The rectum also must be carefully cleaned beforehand. Under usual conditions and with expert care irritation of the rectum is rarely produced. Cunningham, Leggett and Sutton have laid down the principles and developed the technic to a high point of efficiency.

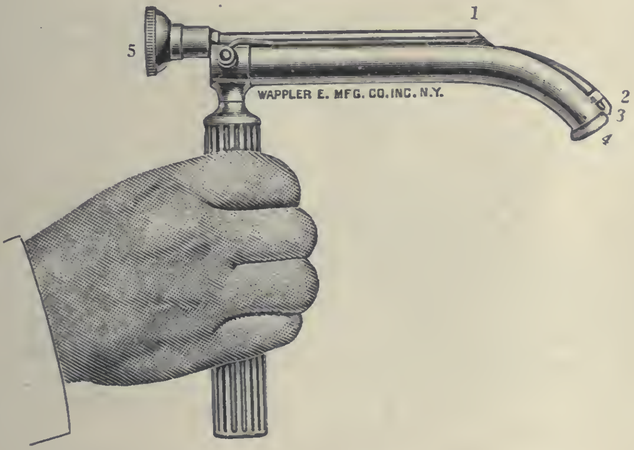
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Figure 1. Indirect speculum for catheterizing the trachea. 1. Prism. 2. Lamp. 5. Objective glass through which the eye of the observer views the larynx in the direction of 3-4.

Intra-venous anesthesia, only recently experimented with in this country, fulfills somewhat the same indications as rectal anesthesia.

To Dr. Francis Honan belongs much of the credit for developing in this country a successful technic for the administration of intravenous anesthesia.

With both rectal and intravenous anesthesia the surgeon must rely entirely upon the patient's position in order to protect the trachea from the inhalation of blood and mucus and it is absolutely important to provide for free expiration in order to regularly eliminate the ether.

In contrast, however, to all these methods, anesthesia by intra-tracheal insufflation, i. e. through a tube introduced into the trachea, meets the requirements of the nose, throat and oral surgeon in an eminently satisfactory manner. Either ether or nitrous oxid and oxygen may be used as the anesthetic. With a minimum of effort on the part of the anesthetist, a perfectly even anesthesia is produced with complete relaxation of the patient and the maintenance of a rosy color. This statement is as true of nitrous oxid and oxygen, assuming that the patient is a normal individual, as it is of ether. In fact intra-tracheal anesthetization by both ether and nitrous oxid renders possible a better and more complete anesthesia that can be obtained by either of these anesthetics when administered in the ordinary manner. It is, therefore, questionable whether intra-tracheal anesthesia should not be ustd very generally.

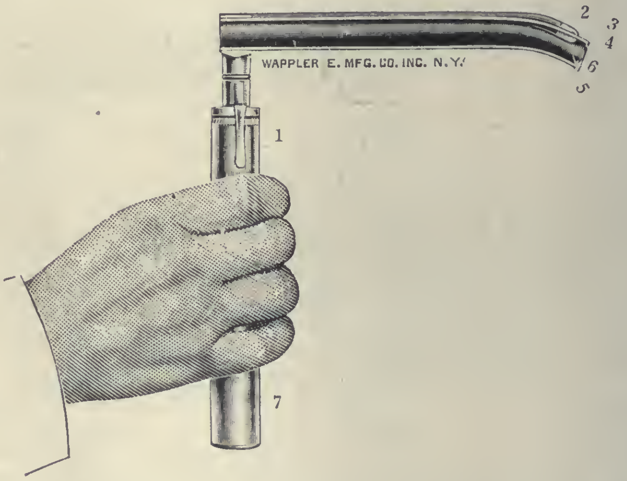

Figure 2. Direct speculum for catheterizing the trachea. 1. Press button for illuminating the lamp 2. Lamp. 3-4. Direction of vision. 5-6. Direction taken by the catheter. 7. Handle containing two dry cells.

The only drawback to intra-tracheal anesthesia is the difficulty sometimes experienced in inserting the intra-tracheal catheter. To the expert laryngologist it may seem that catheterization of the trachea should always be a simple matter. In the fully relaxed patient it is frequently an easy matter to pass a rubber catheter into the trachea with the fingers alone. In many patients, fully relaxed, the larynx can be seen and catheterized without even flexing the head by the aid of the Jackson direct laryngoscope after the manner described by Dr. Richard Johnston of Baltimore.

The most reliable method of all is by means of the Jackson direct laryngoscope with the head in extreme extension. Even if simpler methods were as uniformly successful, the use of the direct laryngoscope in this manner would be preferable for the very important reason that it permits of inspection of the larynx before the insertion of the catheter. Dr. Chevalier Jackson has called the writer's attention to one death already attributable to intra-tracheal anesthesia because of failure to previously inspect the larynx.

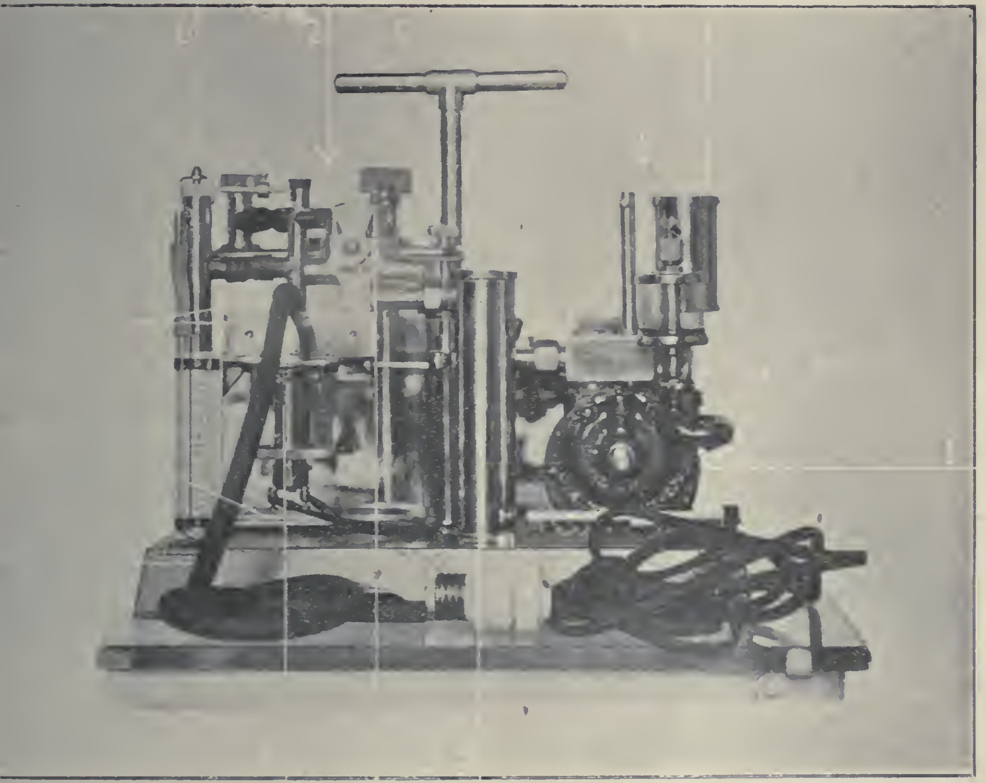

Figure 3. Apparatus for administering intra-tracheal ether anesthesia. It measures 12x14 inches and weighs 28 pounds. 1. Rotary blower; 2. Over the position of the motor which is hidden behind the ether jar. 3. Air filter and muffler into which the air passes from the blower. 4. Slide valve through which the air passes from the filter. It shunts any desired portion of the air from passing through the ether jar. 5. Ether jar. 6. Water jar, containing an electric heater for warming and moistening the current of air. 7. Interrupting slide valve operated by a worm wheel in the position indicated by the arrow "9," but hidden in the picture behind the blower "1." 8. Air pressure safety valve which can be set to blow off at any desired pressure. 10. Manometer. 11. Rubber tube conducting the air to the patient.

Not a little trouble has been experienced, however, in the introduction of the intra-tracheal catheter by this method. In fact, Dr. Connell of Roosevelt Hospital, whose experience has been very large, expressly states, (*Surgery, Gynecology and Obstetrics,* August, 1913, p. 50), that although intra-tracheal anesthesia is the best form of anesthesia and always superior to pharyngeal anesthesia, yet the difficulty of catheterizing the trachea will always prevent the general adoption of the method. The writer's own experience confirms this view. He has seen another surgeon, who has administered as many as 500 intra-tracheal anesthesias, waste no little time in attempting to introduce a catheter into the trachea.

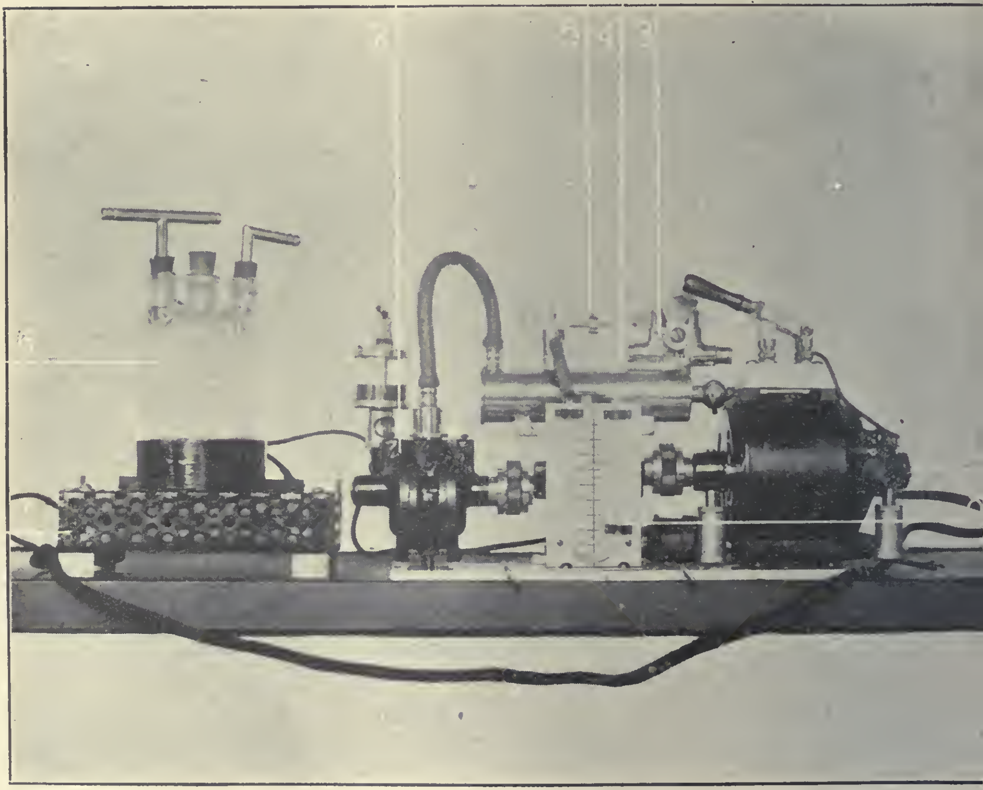

Figure 4. Apparatus for intra-tracheal anesthesia capable of being carried in small hand-bag. It measures 4½"x5"x15" and weighs 18 pounds. 1. Motor. 2. Blower. 3. Slide valve controlling the proportion of air passed over the ether. 4. Filter. 5. Safety valve. 6. Ether flask. 7. Rheostat. 8. Manometer.

It will be unfortunate if a method of anesthesia so universally successful and valuable as intra-tracheal anesthesia fails to receive general adoption because of these difficulties. The main trouble in catherizing the trachea is the tendency for the catheter to fall back into the esophagus. In using the direct laryngeal speculum the writer has frequently been impressed with the great advantage which would be offered by some means which would bend the distal end of the catheter forwards, if only a little forwards, so as it passes over the distal end of the direct laryngoscope. A wire stylet accomplishes this but is inconvenient to use.

In order to accomplish it in a simple manner, the writer has devised the speculum represented in Figure 1. It in part meets conditions demanded. At "1" is a prism which permits of visions in the direction 3-4 when the eye of the observer is placed at 5. With this instrument catheterization of the larynx after cocainization of the pharynx is an exceedingly simple matter in both the conscious and anesthetized patient and with but little extension of the head.

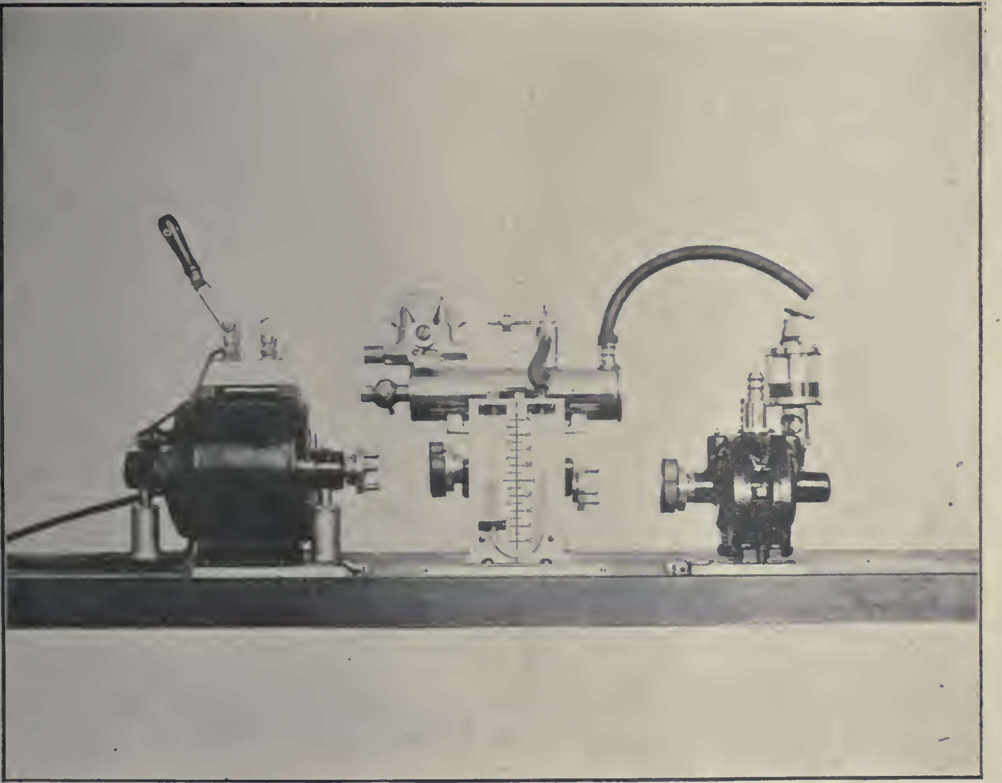

Figure 5 illustrates the manner in which the smaller apparatus may be taken apart into three pieces.

It has been discovered, however, that by shortening the distal end of this speculum the larynx may be viewed directly, that is, without the aid of the telescope, just beneath the distal termination of the curved upper half of the speculum and through its central notch which serves to keep the catheter in the middle line, Figure "2."

This control of the distal end of the catheter even though it causes only a slight forward bend of the catheter offers a very great advantage. It permits of easy catheterization of the larynx even when the patient's pharyngeal reflexes are not completely abolished and without the necessity for the same degree of extension of the head. The omission of the telescope greatly simplifies the instrument, while the possibility of viewing the larynx directly is superior to viewing it indirectly, even though the latter method permits of a greater curve in the distal end of the catheter.

The illumination is obtained through a lamp placed at "2," which is lighted through two small storage cells contained in the handle of the instrument.

With this instrument, a large size of catheter ⅜ of an inch in diameter designed for intra-tracheal anesthesia by nitrous oxid and oxygen may easily be introduced into the larynx.

As soon as the tube has been introduced its external extremity is connected with the tube from the insufflation apparatus; and from this time on, that is before the beginning of the operation, the anesthetist may take his position at any convenient distance from the patient and the operator is unhindered by his presence or by an anesthetizing apparatus other than the tube emerging from between the patient's teeth. This tube, for mouth operations, is best held in place by an assistant who also manages the mouth-gag and retractors, for then it may be moved at will to any portion of the mouth not within the field of operation. For other operations, a small metal tube, one inch long, may be slipped over it between the teeth. This is kept from slipping out of the mouth by a spring which passes behind the neck somewhat in the same manner as a frame truss which maintains its position by pressure around the back. Figure 3 and 4 represents the author's apparatuses designed for supplying the ether vapor to the intra-tracheal tube. There are several features about them which deserve emphasis even at the expense of repetition. Figure 3 represents an apparatus which may be described as an easily portable machine, weighing about 28 pounds and measuring 10x12 inches and capable of supplying a continuous current of warm, moistened air saturated with any desired amount of ether vapor. The current may be interrupted automatically for the purpose of allowing regular deflation of the lungs.

These features are all of some importance and contribute to the best results in anesthesia. The temperature of the air delivered at the end of a tube three feet long has been measured. It is 95 degrees, at least 15 to 30 degrees higher than a current of air coming directly from the ether bottle. It is also perceptibly moistened, and we are forced to believe that the every day experience of the evil effects of mouth-breathing makes it evident that warmed ether vapor mixed with moistened warm air approximate more closely to the normal physiological conditions and are better borne.

Next, concerning the amount of ether vapor. In the above apparatus it is possible to regulate the amount of ether in two ways, first by the slide valve "4" any portion of the current of air may be diverted from passing over the surface of the ether, second, by the cock handle "12" controlling the inlet valve to the ether flask, the percentage of ether vapor in the current of air may be increased over an amount which it is possible to pick up by simply passing the air over the surface of the ether by bubbling a portion of this air through the top layers of the ether. This additional quantity is sometimes needed with alcoholic patients.

Finally as regards the interruptions. By laboratory experiment there seems to be no change in the sphymographic tracings of the pulse produced by regularly interrupting the current of air supplied during intra-tracheal anesthesia when the anesthesia is administered within the limits of the proper pressures for intra-tracheal anesthesia. Very serious diminution of the volume output of the heart is produced by higher pressures. The greatest benefit obtained by interrupting the current of air is the effect of such interruptions when regularly and automatically performed upon respiration. The author possesses tracings which demonstrate the almost entire abolition of efforts at respiration caused by interrupting the current of air during intra-tracheal anesthesia. Such a condition renders the anesthesia far safer and does much, not only to conserve the expenditure of energy by the patient, but the ease of operating for the surgeon. In this apparatus only the physiological effect upon the patient is depended upon as the guide to the correct percentage of ether to use. Such is a safe guide, though Dr. Connell has rendered surgeons a service in defining the correct percentages and showing how closely definite percentages can be followed.

Figure 4 represents an apparatus which is still smaller and, therefore, more portable. It weighs only 18 lbs. and measures 4½x5x5 inches. By removing the two pins penetrating the base plate the apparatus will come apart in three pieces as illustrated in Figure 5 and may then be packed in a small hand-bag. This smaller apparatus is most simple in construction. It contains the same size blower and motor as the apparatus figured in Figure 3 and only differs from the latter in not running quite so noiselessly and in not being provided with so serviceable a means for interrupting and warming and moistening the current of air.

Actual trial with this apparatus during a period of eight months has given uniformly good results. In the majority of cases in which the writer has used the apparatus there have been some special indications for it. Five have been intra-thoracic cases and, in most of the other cases, the operations were within the nose, mouth or about the head. It has given all the advantages which have been claimed for intra-tracheal insufflation. The operations were conducted without interference from the anesthetist or his apparatus and the anesthesia was smooth and uninterrupted. On no occasion was there any inconvenience from blood or mucus in the throat. During the past two years the writer has made a considerable number of esophagoscopic and gastroscopic examinations. These he usually conducts under local anesthesia, but for a complete gastroscopic examination it is desirable to give a general anesthetic. The ease of making these examinations with the smooth uninterrupted anesthesia produced by the intra-tracheal anesthesia contrasted strongly with similar examinations conducted under anesthesia produced by inhalation through the mouth.

Bronchoscopic examinations and operations may similarly be performed under intra-tracheal anesthesia—a small catheter may be inserted by the side of the bronchoscopic tube, or the insufflation apparatus may be connected directly to the bronchoscopic tube and the ether vapor administered intermittently.

In fact, it is interesting to note that a number of years ago Dr. Chevalier Jackson availed himself of true intra-tracheal insufflation and at the suggestion of T. Drysdale Buchanan added an auxilliary ether tube to his bronchoscope.

In conclusion, for the longer operations of the nose, throat and oral surgeon, intra-tracheal anesthesia meets the indications in a manner that no other form of anesthesia does.

The technic of nitrous oxid and oxygen by intra-tracheal insufflation differs considerably from ether anesthesia and will be described in another communication.

104 East Fortieth Street.

THE KUHN METHOD OF PERORAL NARCOSIS.*

DR. FRANKLIN HAZLEHURST, JR., BALTIMORE.

This very ingenious method has been developed by Franz Kuhn, of Cassel, Germany. Kuhn's first communication upon the subject[1] appeared in 1900 under the title "The Metal Tube in Intubation and as Tracheal Canula." The purpose of the instrument employed, as sketched in this brief article, was to bring the trachea in direct connection with the outer air; thus eliminating the mouth and nose as respiratory passages and making possible operations upon the nose and throat and their immediate neighborhood without fear of respiratory obstruction. The flexible metal tube was installed by means of an intubator by a procedure quite similar to the O'Dwyer method of intubation. The author claimed that the use of this tube would frequently obviate the necessity for tracheotomy. In a second paper in 1901 Kuhn[2] has this to say of the technic of introduction: "Though it may be necessary in intubating a child to seek the arytenoid cartilage, it is sufficient in adults to hold the posterior surface of the epiglottis with the left index-finger and let the tube glide into the larynx by making light turning and lateral movements. The tube is held fast in position with the left hand, while with the index-finger of the right hand the intubator is gradually disengaged. If the narcosis is not rather deep, introduction is naturally somewhat irritating."

The tube should be as large as possible, an essential point is the frequent cleansing of the tube of mucus and secretion by means of a "thin spiral brush." Use of the tube in indicated, (1) in cases where, on account of compression of the trachea as in struma or strumectomy, tracheotomy would likely be done, or as a substitute for tracheotomy, for the operative field is cleaner; (2) where aspiration of blood is feared, when gauze may be tamponed about the tube; (3) in routine narcosis to maintain patency of the air passage without pulling out the tongue or holding the jaw forward; (4) in inflammatory conditions where there is edema of the glottis; and (5) as a means of direct inflation after the introduction of the canula. In asphyxia this would be of prime importance.

In 1905 at the congress of South German Laryngologists at Heidelberg, Kuhn[3] emphasized the value of his method in bloody operations on the mouth, lips, jaws, tongue, throat or nose, its usefulness in cases of asphyxia due to anesthesia or other cause, and suggested the use of peroral narcosis to produce increased intra-pulmonary pressure as a substitute for the chambers of Sauer and Brauer in operations in the thoracic cavity. In the following year[4-6] he advocated peroral intubation in operations for cleft palate as well as for naso-pharyngeal tumors. Since the tube allows the mouth to be wide open, the throat near the tube may be tightly packed off; thus preventing aspiration of any material. In consequence of the uninterrupted anesthesia there is an essential shortening in the operation time. The tongue may be pressed back by a spatula, thus carried away from the teeth and the field of operation, and there is a cleaner field and a clearer view.

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*Read at the meeting of the Laryngological Section of the Medical and Chirurgical Faculty of Maryland, Baltimore, March 28, 1913.

Kuhn[7] lays special stress on the use of his method of anesthesia in surgery on the base of the tongue, epiglottis, tonsils, and floor of the mouth. In surgery of these regions, especially in malignant disease, the method is of advantage because anesthesia is continuous, easier, and simpler than in methods ordinarily used. The hanging head may be dispensed with, aspiration is avoided, and the operator has a better view of his field. Kuhn has never seen ulcerations from the use of the tube; he considers that smaller amounts of anesthetic are necessary than would otherwise be employed.

In a monograph on the subject which is a summary of his experience to that date, Kuhn[8] states that he has demonstrated on animals the value of the method for "overpressure," that is for increasing the intra-pulmonary pressure in operations in the thoracic cavity. In treating the asphyxiated, air or oxygen can be introduced through a catheter passed into the trachea through the tube. Its chief domain is, however, anesthesia. It guarantees free inspiration without danger of aspiration, and continuous anesthesia; the narcotic is carried directly to the place of absorption; and it is possible by strong tamponade to suppress vomiting. Kuhn shows that the same observation holds in this method as in tracheotomized patients, that anesthesia is easily induced without release of disturbing pharyngeal reflexes, the reflex region of the trigeminus being excluded from irritation. The method is seen at its best in surgery of the air passages, where, with fear of aspiration removed, there is continual, peaceful anesthesia and the anesthetist is away from the field of operation.

Dirk[9] reported that he had used the method with success in a large number of head operations. O. Hildebrand[8] does many operations with this method of anesthesia, for example the radical operation upon the antrum of Highmore, which he had previously performed under local anesthesia owing to the inconveniences of the general method. Hildebrand, in about 100 cases, saw nothing worse than hoarseness and slight discomfort in swallowing as a result of the employment of the tube. Koehler[10] thinks favorably of the method and is of the opinion that Meltzer has added nothing essentially new to Kuhn's method.

My personal experience with the method has been limited to nine cases. I will state briefly the age, sex and operation for which the method was used where noted, the length of anesthesia through the tube, the quality of breathing before and after insertion of the tube, the amount of mucus contained in the throat, the presence of reflex phenomena as coughing, vomiting, etc.

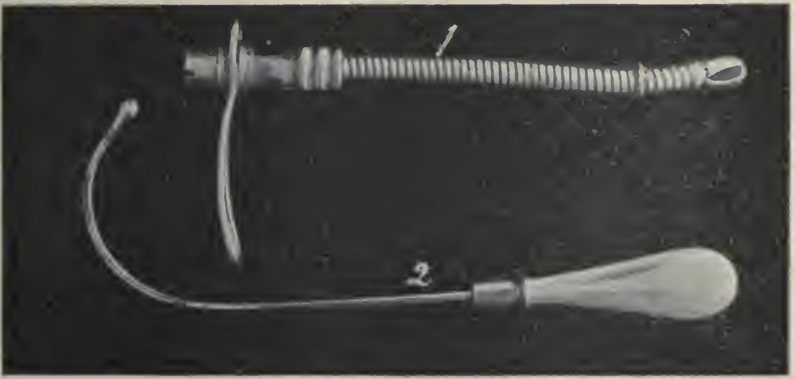

Figure 1. Laryngeal tube. Figure 2. Intubator.

Case 1: Girl, aged 13, disease atrophic rhinitis; operative exploration of left antrum of Highmore, curettage of the left ethmoid. Intubation easily accomplished; breathing, with tube inserted, very natural and easy; on account of the presence of mucus which seemed to be partially clogging the tube, Dr. Stewart of St. Agnes Hospital suggested routine use of morphin and atrophin preliminary to the general anesthesia. Operation time, one hour. Preliminary anesthesia before introduction of the tube, fifteen minutes. This patient was not rendered hoarse; there was slight soreness in the throat for a couple of days.

Case 2: Woman of 35 years. Carcinoma of the nasal fossa. Operation, entrance at inner angle of eye through the Gruenwald incision, removal of the middle turbinate and some tissue at the lower end of the ductus sinus frontalis. The case proved to be malignant involving the base of the brain with erosion of the cribiform plate and the inner orbital plate. The operation was very bloody (malignant tissue) and of about one and one-half hours' duration. The use of the tube was very satisfactory, intubation was easily accomplished, breathing was easy, coughing and pharyngeal reflexes lacking. Patient showed no post-operative soreness of the throat.

Case 3: Man, aged 33; probably luetic necrosis of nasal septum, the hard palate, lateral wall of nose, and polypoid degeneration of the mucous membrane of the right antrum. Operation, radical antrum, with removal of dead bone. In this patient, intubation was readily accomplished but after a short time the tube slipped out. The patient was a tall man, at least six feet and the tube was evidently too small to stick properly between his vocal cords. The tube was the middle sized tube. In this case the voice was not affected. The throat was sore but soreness was probably due to rather rough handling of the tongue during operation.

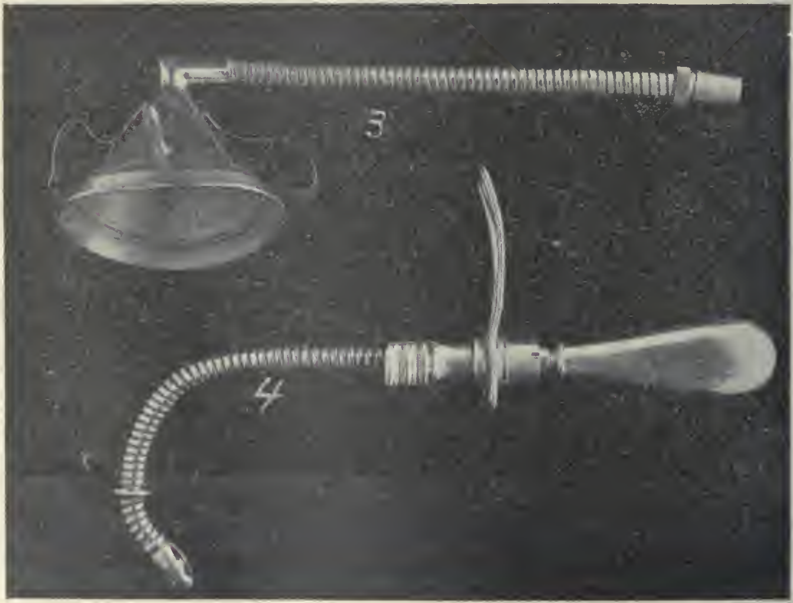

Figure 3. Distal attachment with cone through which anesthetic is administered and patient breathes.
Figure 4. Kuhn's laryngeal tube containing intubator.

Case 4: Woman, aged 32: syphilitic adhesion of the soft palate to the posterior pharyngeal wall with perforation of the soft palate. Operation, closure of perforation, release of adhesions, insertion of silver plate to prevent re-adhesion. The quality of breathing before the insertion of the tube was rough, rapid, rate 40; after insertion of the tube, rate 26 and smoother. There was no coughing or vomiting, etc. The tube was in place for two hours; the voice was unaffected, post-operatively; the throat was sore but this apparently from the raw pharyngeal areas and not from the larynx.

Case 5: This patient was a child, aged 10, on whom a mastoid operation was performed. The tube was inserted with the idea of allowing the anesthetist to be further from the operative field. In this case the tube appeared to be too large for the patient and because of incomplete insertion respiration was partially blocked. After a trial of about twenty minutes, during which the patient's cyanosis became rather marked, the tube was removed.

Case 6: A girl, aged 15, patient of Dr. Bloodgood's at St. Agnes Hospital in whom he proposed to explore for unerupted molar. Duration of intra-tracheal etherization, 20 minutes. The quality of the breathing was smooth, slightly rougher at times from mucous accumulations. Very satisfactory.

Case 7: Patient same as Case 1; atrophic rhinitis; operation left ethmoid through Gruenwald incision at inner corner of eye. Duration of anesthesia after insertion of the tube, one hour and twenty minutes; no untoward symptoms of any kind during or after operation.

Case 8: Same case; operation elevation of septal mucous membrane and deposition of paraffin in order to narrow left nasal fossa. Duration of anesthesia per tubam was about forty-five minutes; breathing was remarkably free and patient had no marked soreness of the throat and no hoarseness after operation.

Case 9: Woman, aged 42; chronic antral and ethmoid suppuration with polyp formation. Operation, radical antrum according to method of Caldwell-Luc, and exenteration of the ethmoid cells, with exploration of the sphenoid sinus. In this case, operated upon by Dr. Goldbach and myself, intubation was rather difficult but after several trials was finally successful. Mucous collection, which was abundant in throat before introduction of tube, was practically absent during anesthesia per tubam, which lasted one hour and fifteen minutes.

My experience with this method, while limited, has impressed me with its great practicability in operations of any kind about the head. The facts stated by Kuhn in regard to the more accessible operative field, the absence of danger of aspiration of foreign material, the practical absence of the large mucous accumulations so common in ordinary methods of ether anesthesia, and the continuous peaceful anesthesia with absence of the usual pharyngeal reflex phenomena are well borne out by my experience.

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Stuttering and Its Treatment. F. A. Bryant, *Med. Rec.*, Oct. 4, 1913.

In a very interesting and instructive paper on this important subject the author describes the various factors in an analytical manner.

Most cases depend, probably, upon an exaggerated irritability of the natural reflexes associated with the spontaneous production of speech. Phylogenetic influences play an important part in causing stuttering. Imitation and fear are also common factors in the production of this ailment. Sudden fright in childhood is an active cause. Attention is directed to the morphological changes that the brain-cells undergo in shock produced by fear, according to the investigations of Crile.

Other diseased conditions of the body are brought about as a result of the habit of stuttering, neurasthenia, hypochondria and melancholia. Improper breathing fails to aerate the lungs and pulmonary changes may occur. The prognosis is variable, depending upon the causative factor.

Didactic and pedagogic treatment shows the best results. This consists in going over the technic of speech from its very simplest forms to that of the complicated utterances. The respiratory channels must be placed in good condition. Lederman.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular Meeting, April 23, 1913.

WILLIAM W. CARTER, CHAIRMAN.

(*Continued from page 1038*)

Safety Pin Removed From Larynx of Child by Direct Laryngoscopy, DR. HARMON SMITH.

Mary McD., aged 12½ years, was first seen by Dr. S. T. Quinn, of Elizabeth, N. J., on February 22, 1913, at which time she was hoarse and had a croupy cough. Temperature was 99° and pulse 90. Examination of throat negative; of chest revealed some bronchial rales. Diagnosis of bronchial croup was made and a laxative with syr. of ipecac was administered. The condition improved under the treatment. February 27, five days later, the child became suddenly worse and Dr. Quinn was again called and found the child in bed with marked dyspnea and dry croupy cough. Temperature, 99°; examination of pharynx negative. Dr. J. S. Green was called in consultation and a diagnosis of membranous laryngitis was made. An O'Dwyer intubation tube was inserted into the larynx which immediately relieved the obstructive respiratory symptoms. Three thousand units of diphtheria anti-toxin was also injected. A culture from the pharynx was negative. The tube was retained forty-eight hours when it was coughed up. The condition of the child improved in every way, except the hoarseness which persisted. On March 18, twenty-four days after the first attack the child again became croupy and in the absence of Dr. Quinn, Dr. Green administered syr. of ipecac with favorable results. As the hoarseness persisted Dr. Quinn called Dr. Norton Wilson in consultation to examine the larynx on March 30, thirty-six days after the first attack, and with the laryngoscopic mirror Dr. Wilson thought he observed a growth in the larynx which he took to be a papilloma, and advised that the child be submitted to me for the removal of the growth and for advice concerning the subsequent care of the case.

On March 31, (thirty-seven days after the first attack simulating croup), I saw the child which was then dyspneic, breathing rapidly, with marked episternal retraction and in bad physical condition. I prepared to do a tracheotomy immediately after examining the larynx and await the physical recuperation of the child before removing any of the growths unless it was found to be single and pedunculated. Under chloroform anesthesia I passed the Jackson laryngoscopic spatula into the larynx and encountered considerable mucus which was sponged away, during which procedure I observed a bright metallic point projecting above the cords in the anterior commissure and with grasping forceps easily removed a closed safety pin, the extremity protecting the point of the pin being uppermost.

The child's breathing immediately became easier and the next day it returned home where it has made an uneventful recovery. The doctor assures me by letter that her voice is now normal, although it remained hoarse for quite a while. The interest of the case lies in the fact that treatment for membranous croup lessened the symptoms, that the introduction of an intubation tube did not disturb the position of the pin, and while the child was able to cough out the tube it still held the pin firmly fixed between the cords, and lastly that in cases where no membrane is in evidence and the microscopic examination of cultures is negative, and the disturbance of respiration and voice continues, it is unquestionably advisable to have the larynx and bronchi examined by the direct method if for no other reason than to exclude the presence of a foreign body as the cause of the disturbance.

DISCUSSION.

Dr. Emil Mayer said that he would like to make one addition to the conclusions drawn by Dr. Smith, namely, to have an x-ray picture taken. In March a child had been brought to him from New Jersey with a history of difficulty in swallowing which had come on shortly after an attack of retro-pharyngeal abscess in December. No history was given of anything that could in any way account for the child's condition, which was really very pitiable. With the aid of a pharyngoscope he was able to get a good view of the larynx. The edema, however, was so great, covering the whole of the upper portion of the larynx, that it was evident something urgent must be done. The child was accordingly sent to the hospital, and there, as a part of the routine examination, an x-ray picture was made, which showed a foreign body in the larynx. The following day there was no difficulty in introducing an esophageal tube, and the foreign body was removed, which proved to be a lead seal with a wire attached. Even at that time, when the father was asked if any piece of jewelry was missing, he replied in the negative. The child recovered very well from the esophagoscopy, but expired in the middle of the night. It had been in a very weakened condition for some time before it was admitted. It seemed probable that its life could have been saved had it been seen earlier. After its death, the father recalled that on January 7, the child had swallowed something and was taken to a doctor, who told them that they were making a fuss about nothing. The father had asked the doctor then to have an x-ray picture taken, but he refused. Strange to say, this whole episode was entirely forgotten. If the father had given this history when the child was brought in it is possible that even then the child might have been saved.

Dr. Smith was certainly to be congratulated on the results in the case reported, and his conclusions should be borne in mind.

Dr. Wilson said that the case was a most interesting one. When he was called to see the child the day before Dr. Smith saw it, he examined it with a laryngeal mirror and thought that he discovered a slight growth of some material which looked like a papillomatous mass. He had suggested that it was the proper thing to have a direct examination made to determine its true character and referred it to Dr. Smith.

Dr. Lynah congratulated Dr. Smith on the very interesting case he presented, and also wished to congratulate the physician who was able to intubate a larynx with a foreign body without dislodging it. He thought this broke all records. He himself had intubated a child with an enlarged thymus gland which had been mistaken for croup. So far as cultures in these cases are concerned, they are frequently negative, for staphylococci outgrow the diphtheria bacilli on the surface of the membrane and unless you get under the membrane you will get a negative result. Therefore under the conditions correct judgment was used in treating the case as laryngeal diphtheria. From fifty to sixty per cent of the cases of laryngeal and bronchial diphtheritic stenoses show no local manifestations in the pharynx and such a case as Dr. Smith has reported should put us on our guard when dealing with types of acute laryngeal stenosis.

Dr. Harmon Smith said that he could very well understand how this object was mistaken for a papilloma, as it was covered with mucus, the child was breathing rapidly and a view of the larynx was obtained with great difficulty. To illustrate how near the child had come to having a tracheotomy performed unnecessarily, Dr. Smith said that when called upon by Dr. Quinn relative to what had best be done in the case of papilloma of the larynx, he had suggested that tracheotomy be performed and advised that Dr. Wilson perform the operation there instead of sending him to New York for it. He said, however, that if he wished him to make an examination for the determination of the character of the growth that he could send him in to the hospital where the examination could be made, and then returned to Dr. Wilson for the tracheotomy. The discovery of the foreign body was really accidental as preparations had been made for the diagnosis and possible removal of the papilloma. The pin was located in the anterior commissure and held there apparently by muscular contraction rather than by adhesion, as it was extracted with difficulty and without bleeding. The main interest of the case lay in the intubation with the safety pin in the larynx and the difficulty of obtaining a correct diagnosis under problematical circumstances without the employment of the x-ray or the use of the direct method of examination.

Case of Congenital Deformity of the Nose. Presented by Dr. Carter for Dr. Myles.

The patient was a child, 6 months of age, with a congenital deformity of the nose. It was brought in to Dr. Myles' clinic to-day, and the mother was asked to bring the child before the Section. Dr. Myles would like to have any suggestions as to the character of the deformity, the best way to correct it, and when it should be attempted. It was a very interesting and rare condition. The child is perfectly healthy and the parents are young, strong and have no history of specific disease. At the third month of pregnancy the mother struck her abdomen against the sharp corner of a bed.

DISCUSSION.

Dr. Emil Mayer said that it was difficult to speak positively from a superficial examination of so interesting and unusual a case. It would seem worth while, however, to consider elevation of the nose from within; perhaps Carter's ingenious bridge splint might raise up the depressed condition. It might be well to try that first, and then later on see what could be done to the interior of the nares.

Dr. Carter said that it was an extremely rare type of nasal deformity, and was due, as could readily be seen, to an imperfect union of the two sides of the nose. Other portions of the child's head also showed a tendency to the embryonal type; the eyes were far apart, the nasal bridge was very wide, and there was a tendency for the eyes to remain on the side of the head, as in the embryo. It is a true embryological nasal deformity. Such cases were very rare indeed. It had been his good fortune to see one other, the only one he knew of in New York. The patient was a girl, 18 years of age, first seen in 1910. He did not recall whether or not he had presented the case before the Section. There was a double septum, the two planes being developed side by side, with an interval between. At the tip of the nose there was a wide separation of the two nostrils. The cartilages forming the nasal orifices being separated by a deep furrow, each cartilage forming a naris by itself. In correcting a deformity of this kind something else must be done besides a readjustment of the nasal tissues. They are all out of place. As Dr. Mayer had suggested, the bridge splint operation, accompanied by a plastic operation would seem to be indicated. A wide, wedge-shaped piece would have to be taken from the center of the nose, and under the alae it would have to be raised up. A semilunar flap would have to be made, and the two parts brought up and everted to make a tube. The nasal processes of the superior maxillae would also have to be approximated by suitable apparatus.

This is what is called the "dog-nose deformity." In a young child like this, it would seem that something could be accomplished by doing a plastic operation, and using the bridge splint, and then moulding it into shape by means of lead plates, padding them and changing them from time to time, so as to bring the nasal process of the superior maxillae closer together. It was also a question as to whether or not some apparatus might not be devised to bring the whole head into better adjustment, for there was a possibility that this child might become blind. The girl upon whom he had operated was blind in one eye, supposed to be due to the fact that the images had been suppressed for so long in the eye. Beginning at the age of this child, one ought to be able to get good results, for if the parts could be brought into good position and develop in good position a good result might be secured.

Dr. Carter showed a cast of the case upon which he had operated—a typical case of dog-nose deformity, showing the way such cases develop at about the age of his patient. The eyes were away over on the side of the head, so far separated that the concentration of the visual angle was impossible, and the girl became blind in one eye.

In correcting a nose of that kind after it has reached the adult stage, it was not advisable to narrow the bridge of the nose too much, for in correcting the nasal deformity the symmetry of the face must be considered, the relationship of the distance between the eyes, the size of the nose, and the size of the face, etc. To narrow the nose too much would create a greater asymmetry than already existed. The casts of Dr. Carter's case showed perfect correction of the deformity.

In operating upon the girl referred to, Dr. Carter said that a wedge-shaped piece was removed. After taking out this wedge the edges of the wound were everted and brought together. The bridge splint was kept in place for two weeks. The operation corrected the greater part of the deformity, but the eyes were still very much to the side of the head. Posterior rhinoscopy showed the choanae to be much broader than usual; the septum, also, was very broad, and was double.

Dr. Wilson asked if he was correct in understanding that this child was blind in one eye.

Dr. Carter replied that he did not know whether that condition prevailed in this instance, but in the case he had operated upon the patient was blind in one eye. It was said that the image was suppressed in that eye for so long that she could not see. Her eyes were very carefully examined, there was no optic atrophy, and they were said to be all right. Possibly there was some malformation of the retina that prevented her from seeing, but she was certainly blind in one eye.

Intra-Nasal Operations and Their Relation to Hearing. Dr. Samuel W. Thurber.

(*To be published in full in a subsequent issue of* The Laryngoscope.)

DISCUSSION.

Dr. McCoy said that the paper was most timely and particularly adapted for the Nose and Throat Section. Those who treat the ears, as most of the members do, see many dire conditions. Many patients suffer disastrously from deafness and tinnitus, which is all the more distressing when we consider that many, if not all of them, could have been prevented by proper attention to the nose and naso-pharynx at the proper time. The paper presented many good points for discussion. In considering the etiology of the so-called dry catarrhs—the catarrhal adhesive conditions in the middle ear—we find that almost always the cause is located in the nose or naso-pharynx. Many of these cases start in childhood, and it would seem that the regular examination of the nose and naso-pharynx during childhood would, in a large measure, conserve the hearing of children, and adults as well as the specialists who are seeing children all the time, cannot have this fact impressed upon them too strongly. Not long since, in a paper before the Children's Section, some of the members of which rather pooh-poohed the idea of children having sinusitis, it required a good deal of argument to persuade some of the pediatrists that one might frequently see accessory sinusitis in a child.

Dr. Thurber had spoken of the amount of accessory sinusitis seen in children. It was granted to be the cause of many cases of atrophic rhinitis. We have had many cases of accessory sinus disease. Dr. Mc-

Coy said that in his practice, during the last few years, he has had occasion to operate radically on children from 1 to 6 years of age for ethmoidal labyrinthine conditions which had suppurated and perforated the orbital plates and extended into the eye. If that had been his experience in six years with such virulent infections as to have broken through into the eye, it is easy to see that there must be many cases which should be treated, but fail to receive attention because the conditions are not extreme. Many children unquestionably suffer from accessory sinus conditions. The conditions in the pharynx are generally classified under the term of adenoids, and the conditions in the nose as hypertrophic rhinitis and deviated septum. In hypertrophic rhinitis Dr. Thurber mentions deafness as being caused by deficient drainage and deviated septum also.

It is a nice question as to how young we should operate and how much of the septum should be removed. Dr. Thurber's dictum to conserve as much of the septum as possible was wise; yet, if it should be so deviated as to cause serious trouble, possibly accessory sinus or ear trouble, it should be removed so as to give good ventilation and drainage to the nose.

Another question which had been brought up was that of operating for the removal of adenoids in an acute stage of inflammation in which the ear is involved. There is no question but that all agree it is better to wait until the acute stage has subsided. As Dr. Thurber has said, if we wish to preserve or help the hearing, we must preserve the function of secretion and attend to the proper ventilation and drainage of the air passages.

In the latter part of the paper, reference was made to the question of whether it is wise to remove the minor deformities of the nose. It would seem that it is wise to remove them, for a slight deformity in one nose may create a great amount of disturbance, and a large amount of deformity may create a small amount of disturbance; therefore, since we cannot measure the amount of disturbance that is being created, we should do everything we can to remove the obstruction and place the nose in as normal a condition as possible in order to conserve the hearing of the future generation. This applies particularly to the examination of children.

Dr. Seymour Oppenheimer said that the paper brought up many important points for consideration. The prognosis of hearing, so far as influenced by intra-nasal treatment and surgery, depends very much on the prognosis of the intra-nasal condition. Given a case of intra-nasal disease which is amenable to treatment, the otitis is more amenable to treatment provided the functional conditions show not too great a deviation from the normal, i. e. not too great an adhesive process and there is no internal ear involvement, for in this latter condition all intra-nasal treatment and surgery is of no avail.

As to operative and pathological conditions, one in particular which is frequently overlooked and which is largely responsible for the existence of otitic symptoms, is the presence of posterior hypertrophies of the turbinate bodies. It has only been since more of the men have been working with the pharyngoscope and inspecting the pharynx better that we are able to recognize more accurately conditions in the naso-pharynx. It is astonishing to find how frequently posterior hypertrophy of the inferior turbinate exists, and how frequently we can with this instrument recognize conditions of the mouth of the Eustachian tube which could not be recognized with the post-nasal mirror; and how frequently we find secretions coming from the choanae which affect the mouth of the Eustachian tube and give rise to otitic symptoms. The results in cases of deafness have been very much better since we have been paying more attention to the condition of the mouth and lumen of the Eustachian tube. I take it for granted in these cases that there is something in the nasal passageway which has been the cause of these tubal inflammatory processes.

As to the removal of adenoids, it is surprising how often this is badly done in so far as it affects ear symptoms. A prominent otologist who does not do any throat operations, recently stated that he had been sending his adenoid cases with otitic symptoms to the laryngologist, but that most of the men that had operated for him failed to correct the conditions; for while they removed a large mass from the pharynx, they generally overlooked the very region which had caused the otitic symptoms, namely, the lymphoid mass in the fossa of Rosenmueller. More care should be exercised in the removal of masses of lymphoid tissue in the naso-pharynx, and some type of operation should be adopted which will permit the removal of lymphoid tissue under direct inspection, rather than working in the dark with the curette.

The time of operation is most important. Many times, sufficient judgment is not exercised in urging operations in the nose and throat in the presence of acute or sub-acute otitic symptoms. Dr. Oppenheimer said that he knew of many unpleasant occurrences which had developed as the result of injudicious and ill-timed operations, not sufficient time having been allowed to elapse to permit the naso-pharynx to free itself of infection.

Dr. Page expressed his regret that he had not arrived in time to hear all of the paper. He thought that what Dr. McCoy had said about obtaining proper ventilation of the naso-pharynx without *subsequent atrophic changes* occurring, was what was most to be desired. Several years ago the tendency of the operators was to attempt the removal of every vestige of adenoid tissue in the naso-pharynx. Their enthusiasm often resulted in the destruction of the whole mucous membrane, and in such traumatism around the tubes that double otitis media was not infrequent. This practice is still not uncommon. He considers it better practice, particularly in babies and young children, to remove the adenoids only with a La Force adenotome, without trying to scrape it all out at one time with a curette. When recurrence occurs it can be removed again in the same way, with the gentle use of a small curette in Rosenmueller's fossa where this is particularly indicated.

He agreed with what Dr. Oppenheimer had said about the use of the naso-pharyngoscope and had himself found this instrument of great value, as with it he had been able to inspect conditions in the naso-pharynx which could not be seen with the mirror and to treat conditions which he could not treat before. He had also found Dr. Yankauer's Eustachian applicator very useful in these conditions.

Dr. Phillips said that Dr. Thurber's able and interesting paper had evidently been prepared for the purpose of provoking a discussion, and there was little doubt that it would accomplish that purpose. A number of points suggested themselves to him, but he would confine his remarks to two or three. In the first place the primary cause of acute purulent otitis media is in the nose. Recurring attacks of acute purulent otitis media invariably occur in children who have adenoids and tonsils, and if you take these out you will have no more trouble. The cause of infectious purulent otitis media is the introduction of infectious material through the Eustachian tube, and of course it comes from the nose and naso-pharynx. There are rare exceptions to this. Just so far as attacks of acute infectious rhinitis are prevented, the frequency of acute purulent otitis media will be lessened.

In regard to acute and chronic catarrhal otitis media: Acute catarrhal otitis media is a distinct affection and should not in any way be connected or associated with acute purulent otitis media. They are not alike in any respect. Acute purulent otitis media is bacteriological and inflammatory in its origin. Acute catarrhal otitis media is never infectious and it never becomes purulent of itself. Whenever the purulent state supervenes, it is a new disease due to a new cause. What is the cause of an acute catarrhal otitis media? It is due to temporary closure of the Eustachian tube. Following said closure some reduction of the enclosed air takes place and a partial vacuum ensues. "Nature abhors a vacuum," and hence the drum retracts. You have a retracted drum in acute catarrhal otitis media and you have a bulging drum in acute purulent otitis media. The next thing to occur after the drum is retracted is the pouring out of serum from the small blood vessels into the tympanic cavity. Now, the untreated cases of acute catarrhal otitis media, wherein the serum is allowed to remain and no effort is made to release the pressure in the intra-tympanic cavity, gradually become chronic in type. The treatment for acute catarrhal otitis media is inflation. Dr. Phillips expressed the opinion that we fail to realize how frequent are these attacks in children, and how many children of ten, eleven, twelve or thirteen years of age show degenerative changes in the drum—retraction, etc., and that failure to treat acute cases in childhood is the cause of chronic catarrhal deafness.

It is not so much the importance of telling the fathers and mothers that they must have the noses of the children kept in perfect condition. Even the removal of tonsils and adenoids does not wholly prevent children from catching cold and having attacks of catarrhal otitis media. Parents should be instructed that when their children have colds in the head with indications of acute catarrhal otitis media,—slight pain, deafness, stuffy sensations,—to consult an otologist for prompt treatment. In this way, the development of catarrhal otitis media will often be prevented.

Dr. Kopetsky stated that he wished to add one point to what Dr. Phillips had said. In adult cases, which are already deaf,—where the connective tissue changes have already taken place—it is theoretically and practically useless to expect absorption and restoration of function by any procedure on the nose. It is a matter of chagrin to find, after promising a patient with a deviated septum who suffers from deafness a recovery of his hearing, and after subjecting him to the financial and time loss of the operation, that he is no better than he was before. Undoubtedly, attention to the ear itself and attention to the Eustachian tube might accomplish the same result without subjecting such a patient to the operative procedure on the nose or pharynx.

Dr. Kopetsky said that though he followed Dr. Phillips closely he could not follow all of his views. In children, in spite of the removal of the adenoids and the tissue in Rosenmueller's fossa acute and chronic infections of the ear develop. It is well to pause occasionally in recommending the removal of tonsils and adenoids on account of the so-called effect on the ear; for he has seen cases put as near the normal as possible and these eventually develop deafness,—so it cannot be said that the removal of the so-called caustive factors in the nose will greatly tend to the restoration of the hearing of the deaf. The nose might require surgical treatment on its own account, but Dr. Kopetsky thought that the effects produced by intra-nasal surgery among those afflicted with deafness was very much over-estimated, by both the laity and the profession.

Dr. Danziger, admitting the importance of the anatomical deformities in the treatment of otitic disease, said that, in a number of cases where children suffer from chronic rhinitis without any other deformity, it must be remembered that the mucous membrane of the naso-pharynx is only a part of the respiratory system. The mucous membrane is liable to infection in certain constitutional conditions as in the congenital vulnerability of the structure in the presence of tuberculosis and lues. An early Wassermann is sometimes more important than surgical procedures.

Dr. Phillips had spoken of treating acute catarrhal otitis by inflation. He could not entirely agree with what the Doctor had said, for to have a catarrhal otitis there must be an inflammatory edema in the Eustachian tube due to infection. Dr. Phillips had said that if you do not introduce infectious material into the middle ear you will not get infection there. If you blow infected air into the ear, how can you avoid infection?

The Chairman said that the discussion was rather getting away from the topic of discussion, which was "Intranasal operations in relation to the hearing,"—The points to be discussed are chiefly, the beneficial or non-beneficial results to the hearing resulting from intra-nasal operation.

Dr. Miller inquired what time Dr. Thurber would advise that operation should take place in these questionable cases.

Dr. Herzig suggested that in case an operation is necessary for the cure of catarrhal ear affections the submucous resections should be preferred whenever possible to a turbinectomy. The regulation of an ante-proteid (red meals) diet is of the greatest importance after these operations as it greatly diminished the congestion.

Dr. Carter said he wished to call attention to one point in regard to the after-treatment of intra-nasal operations, as regards the injury to the ear and the quick recovery from these operations. If we can control the capillary circulation in the mucous membrane of the nose, we can prevent any complication that might affect the ear. He had directed attention to this point some years ago and had first suggested the use of vaseline gauze and described its preparation. Used in the nose after operations, this would do more than anything else that he knew of to limit the second and prevent the third stage of inflammation. It would limit the stage of retardation of the capillary flow and prevent the stage of stasis. If this can be done, intra-nasal operations are quickly recovered from and middle-ear complications are not apt to occur.

Dr. Carter said that he was glad to see that his original suggestion had been widely adopted and that vaseline gauze was now generally used as a packing after intra-nasal operations.

Dr. Phillips said he had hoped that some one would have spoken on the question of operating on the nose during the time when an acute inflammatory process was going on in the nose or ear.

Dr. Carter replied that he thought every rhinologist recognized that principle, and that no one would dare to touch a nose or throat during an acute inflammation.

Dr. MacKenty said that in acute otitis media the removal of the adenoids was usually a justifiable procedure. The removal of the tonsils is not necessary at that time. Often the removal of the adenoids in an acute condition will serve to promote drainage and will not do harm, if done properly, which always means not with the curette.

In regard to the objection to the use of the curette in the naso-pharynx: If used at all, it should be used with the greatest care. Intra-nasal operation should certainly never be done unless urgent during acute conditions.

Dr. Thurber said that the purpose of the paper *was* to provoke discussion. One of the chief difficulties in children is to obtain good nasal drainage. Secretions held stagnant by the apposition of septum and turbinates soon become thickened and often purulent and thus do harm to the ears.

Dr. Thurber, replying to Dr. McCoy, said that it was his rule to remove just enough of the septum, by one of the several methods, to permit good drainage, trusting to further growth to enlarge the nasal cavities and, at the same time, not removing so much that growth of the septum would be interfered with.

In regard to operating for adenoids in acute otitis media: Each case must be judged on its own merits. No one would think of operating on a case if the ears were doing well but in the cases where there is evident delayed resolution, adenoids would probably have to be removed. In chronic ear infections, the case is different. One has waited for resolution without results and the indications for removing adenoids or any mass that is obstructive, are clear enough.

He agreed with Dr. Oppenheimer that the naso-pharyngoscope gave a better view of the Eustachian tubes than any other instrument yet at hand. The fault with the post-nasal mirror is that it has to be placed so far below the level of the nasal floor that the true relations of the post-nasal structures are not well seen.

In regard to the use of the adenoid curette: The curette can and should be used as delicately as one would use a uterine curette. It is possible to educate the touch so that one is able to tell when all the adenoid tissue has been removed. The object is not to use such great force that the whole naso-pharynx is denuded of membrane.

He agreed with Dr. Kopetzky in what he said about giving promises of cure in chronic otitis media. The changes in the middle ear are there to stay and comparatively little can be accomplished by treatment. He had mentioned letting the turbinates alone unless there are marked bony enlargements. Too many turbinectomies have been done in the past. No one can make set rules for intra-nasal operations. It is a question of using good judgment upon each case.

Tumors of the Carotid Gland and Their Relation to the Larynx: With Report of Case and Microscopic Section.

DR. JAMES G. CALLISON, (by invitation).

DISCUSSION.

DR. MACKENTY said that the Dr. Callison's paper was most timely, for very few of us in making differential diagnoses of tumors of the neck think of the carotid body as being a possible cause. It has not been presented before as Dr. Callison has treated it. The surgery of the carotid body is certainly very difficult, and if not undertaken early in the growth before the malignancy has involved the arteries death from unilateral cerebral anemia or recurrence may be expected.

In operating on this case, he opened the neck extensively and found a large mass under the deep fascia. Going down on it, he lifted the whole contents of the anterior compartment of the neck including the sympathetic nerve and everything in the sheath of the vessels. It was split open, but it was found that it would be impossible to remove it without removing the vessels and nerves, so he simply removed a portion of the growth and sewed the neck with drainage.

Unfortunately in the next bed of the ward was a case of erysipelas, which he also developed. A few weeks later he had a very severe hemorrhage, and on opening the wound it was found to be from an open common carotid artery. This was tied and the patient died a day later. Hemiplagia occurred.

The presence of tumor in the carotid location is suspicious. These growths are benign at first, as a rule, and of slow growth; mobility is another point. All one can do is to surmise that it is a tumor of the carotid body. The examination of a pathological specimen is necessary; even then the diagnosis is difficult as shown in our case.

Dr. MacKenty said that Dr. Callison had done a great deal of work in compiling this paper, probably the best that had been done anywhere, and that he had presented the subject exhaustively, which was of great interest and value, giving as it does the subject up to date.

DR. CALLISON said that the tumor seemed to occur at all ages, the youngest patient being 7 years of age and the oldest, 76, most occurring in middle life. The patient in the particular case cited was 41 years of age. The tumor shows a very mild form of malignancy and is best left alone.

Report of a Case of Bronchial Carcinoma With Skin Metastasis, Terminating in Tracheal Stenosis and Laryngeal Edema.

DR. OTTO GLOGAU.

Mr. M. N. presented himself in February 4, 1913, at my Clinic at St.

Marks Hospital. Previous history: Patient suffered ten years ago from pleurisy, but was otherwise always healthy until about six months ago when his present ailment set in. He started to cough, brought up some phlegm and was somewhat short of breath when he over-strained himself. About four months ago he noticed a swelling at the left side of the neck, that gradually increased in size and spread backward and downward. Soon afterward he noticed two red patches at the center of the chest. Every day some more of these red patches would appear, till almost the entire chest, neck and back was covered by them. The swelling at the left side of the neck within the last few days became so big that it interfered with his breathing and within the last day almost choked him. He has lost in weight considerably during the last few months.

Present state: The patient is 50 years of age and somewhat emaciated. He is gasping for air and appears to be almost choking. For the following description of the status of the skin of the patient I am indebted to Dr. L. Oulmann, Dermatologist of the German Dispensary, who was kind enough to see the case with me after his admission to the hospital: "Around the larynx, the skin is somewhat infiltrated and over the chest covered with light-red patches of different sizes from lentil-form to one by two inches in irregular form. At the left side of the neck a tumor can be felt, which is adherent to the underlying tissues and to the great vessels as well as to the skin. This tumor is of about apple-size, presses on the larynx, and pushes the latter together with the trachea over the middle line towards the right side; from the larynx to the sternum the neck shows hard infiltration. The chest as well as the back are covered with the above-mentioned red patches, which extend in front down to the eighth rib, in back yet further downward, but more sparingly. The left side is more covered by these patches than the right one, but the lesions present extend over the middle line in front and back. The lesions show marked infiltration and are slightly raised. Some of them are covered with a crust, which is hard and adherent to the skin, and when scraped shows a weeping epidermis. Around the margins the enlarged capillaries can be followed up into the normal-looking skin."

Inspection of the larynx by both larygeal mirror and the pharyngoscope revealed an almost total occlusion of the entrance of the larynx, due to an excessive edema of the ary-epiglottic folds and of the arytenoid cartilages. The left cheek, right above the tumor, from the inside showed a toughy edema and infiltration of the size of a walnut. As the patient was in danger of life from suffication, he was immediately admitted to St. Marks Hospital and I performed a tracheotomy. As my tentative diagnosis was malign tumor of the neck causing by pressure laryngeal edema, I decided to do a superior tracheotomy; thus supposedly opening the trachea right beneath the stenosis. In order to reach the trachea, the above-described tumor had to be divided. On account of the size of the superimposed tumor, the trachea was very deeply situated and was reached only after the separation of a mass of very friable and excessively bleeding tissue. The trachea had been pushed beyond the middle line for about one-half an inch. The trachea was incised and a middle-sized canula introduced. The lumen of the trachea was, however, so narrow that a thin canula had to be resorted to. It became apparent that the entire trachea was stenosed due to the pressure of the tumor which extended very much deeper and further downward than could be expected by its outward appearance. The depth of the wound, i. e. the distance from the incision of the skin to the incision of the trachea was about two inches. The canula had, therefore, to be introduced and fastened at the bottom of the wound and the wound had to remain open. Should the wound have been closed and the canula, as usual, been fastened to the skin, the canula, due to the width of the tumor mass, would not have even reached the tracheal incision. Around the neck of the canula the wound was packed with gauze and the opening of the canula covered with gauze dipped into warm saline solution. The house-surgeon was instructed to remove and clean at intervals the inner tube of the canula. During the day the patient felt greatly relieved.

Dr. L. Oulman, concluding from his above-mentioned report, was kind enough to diagnose the case from the appearance of the skin in the following way: "The mammae appear normal and there are no nodules present. The latter fact excludes cancer en cuirasse, the former a primary carcinoma of the mammae. The extensive involvement of the skin without tumor formation of any size excludes sarcoma, while angio-sarcoma of such large involvement never appears without some bleeding into the skin, never would be covered with crusts, and would show a different taint. Therefore the *diagnosis is made of secondary or metastatic carcinoma of the skin due to a primary carcinoma either of the neck, if the tumor there was a primary carcinomatous degenerated cyst, or from some primary cause in the chest, with a secondary metastasis of the neck and of the skin.*

Pieces of skin, including the corium and subcutaneous tissue were removed for microscopic examination and sent to the Pathological Laboratory of the Woman's Hospital.

The day following the operation I was informed over the telephone that the patient was almost suffocating. I hurried to the hospital and found the patient in great distress. He did not breathe at all through the tracheal canula. Inquiring from the house-surgeon whether the inner tube had been removed and cleaned as ordered, I learned that this had been done a few times and even a very short time before my arrival. Upon inspection of the wound, I found the canula apparently in the tracheotomy wound and was therefore at a loss to account for the patient's failure to breathe through it. I removed the canula and inserted it again, with the same untoward result. The patient in the meantime grew worse and worse. Searching the bottom of the wound I accidentally pulled the dislocated trachea towards the middle line and suddenly noticed tracheal breathing from a place quite remote from the spot where the house-surgeon and I had inserted the canula. Through thorough inspection and inquiry the mystery was solved in the following way: Before performing the tracheotomy I had pulled towards the middle line the trachea that had been dislocated by the pressure of the tumor and made the central incision. The inserted canula prevented the trachea from following its tendency to return into its dislocated position. When the house-surgeon tried to remove the inner tube in order to clean it, the canula slipped out of the tracheal wound; the trachea thereupon returned into its dislocated position, thereby twisting somewhat about its long axis and turning the centrally located incision laterally. The house-surgeon tried to reinsert the canula and after many trials mistook an excavation at the bottom of the wound, at its inferior angle, for the tracheal incision and inserted the canula into it. In trying to find out the reason for the patient's not breathing through the canula, I first made the same mistake until I accidentally detected the displacement and consequent occlusion of the tracheal incision. After the insertion of the canula into the tracheal incision the patient, of course, felt much relieved.

Bearing Dr. Oulmann's tentative diagnosis of primary carcinoma within the chest in mind, it occurred to me to examine the patient bronchoscopically through the tracheal incision. After thorough cocainization, I introduced a narrow bronchoscopic tube, attached to Bruening's bronchoscope through the tracheal incision down to the bifurcation and first into the right and then into the left main bronchus. The lumen of the trachea and the right bronchus was very narrow, and that of the left bronchus almost entirely occluded. One inch beyond the bifurcation, I detected within the left bronchus a whitish-yellowish mass of apparently decayed tissue which I diagnosed as carcinoma. I thought of removing bronchoscopically a piece of the tissue for microscopic examination, but the condition of the patient grew so bad that I had to withdraw the bronchoscope. Within a few hours following the bronchoscopic examination the patient became so short of breath that I was called to the hospital. It was evident that the tracheal canula could not give him relief, as the entire trachea below it was stenosed on account of the tumor and infiltration of the adjacent tissues. In order to prolong the life of the patient, I introduced a small bronchoscopic tube into the right bronchus and left it in place instead of a canula. The patient felt much relief for a short time, but the bronchoscopic tube became clogged up and had to be removed and inserted again after being cleaned. The insertion of the bronchoscopic tube in this case was very hard, as the tracheal incision was two inches below the level of the skin and it was only by resorting to great strength that the trachea could be stretched sufficiently. The procedure, of course, was very painful to the patient. While the bronchoscopic tube was removed he did not get any air at all and almost choked. After each insertion of the bronchoscopic tube he recovered for some time. The oxygen tank was attached to the bronchoscopic tube, but the improvement was inconsiderable. By resorting to the bronchoscopic tube the life of the patient was prolonged for twenty-four hours. He died on February 9, 1913, at 6 p. m. from suffocation. Permission to post-mortem was refused by the relatives. They only consented to the removal of the larynx.

The specimen of the larynx shows an extreme edematous infiltration of this organ. The ary-epiglottis folds, the arytenoid cartilages, the false vocal cords and the recussus Morgagni are transformed into a huge mass of edematous tissue that occlude the larynx. The larynx was surrounded and encroached upon by a mass of infected glands forming the above-mentioned tumor.

A few days afterwards the following pathological report was received from Dr. Emil Schwarz, Associate Pathologist of the Woman's Hospital:

"The specimens of skin show a normal but slightly atrophied epidermis. The subcutis shows a very loose hyperemic, hyaline degenerated connective tissue, which becomes denser around the otherwise normal sebaceous glands. Within this loose subcutaneous tissue there are imbedded within the lymph vessels numerous smaller and larger nests of polygonal cells of about 15-20 mikron diameter. There are sometimes strands, sometimes tubular cell collections. The lymph vessels appear to be infiltrated by these large protoplasmatic cells that are closely packed together in an epithelial-like manner without intervening stroma. The cells for the most part are rather large and possess deeply-stained, rounded and ovoid nuclei, and rather abundant finely granular cytoplasm. The cell-boundaries are indistinct. In some of the larger islands the tissue is necrotic in the central portion. Some dilated lymph-vessels show regular infarcts of these cell-complexes, with vacuolization here and there. The microscopic sections allows of the conclusion that we have to deal with a metastatic carcinoma of the skin, propagated through the lymph channels of the skin and probably originating within the respiratory tract. The metastatic carcinoma is caused by an infarct of the lymph glands from the original tumor and to subsequent retrograde propagation over the subcutaneous tissue along the lymph channels. The differential diagnosis between sarcoma cutis multiplex idiopathicum (kaposi), endothelioma metastaticum, mycosis fungoides, and leucemic skin tumors rests with the character of the cells, being doubtlessly epithelial, with the locality of the affected lymph glands and the secondary spreading over the left thoracal region, the absence of leucemia and the lack of regularly developed mycosis fungoides eruptions.

From the localization of the affection and from the form of the cells (most probably derived from cylinder cells) I judge that the metastasis of the skin in this case is due to carcinoma of the respiratory tract, probably to bronchial carcinoma."

Dr. Schwartz was kind enough to search the literature for similar cases. Reitman (*Arch. f. Dermatologie*, Vol. 90, p. 359) reports about forty cases where carcinoma of the internal organs spread over large areas of the skin. About half of the cases are metastasis of carcinoma ventriculi, while 15 per cent are metastasis of carcinoma of the lungs. Recklinghausen mentions the lymph vessels as propagating such metastatic carcinomata of the internal organs. Cases of skin metastasis (carcinoma ventriculi) are furthermore reported by Kreibich (*Med. Klinik*, Vol. 39, 1909); Offergold, (carcinoma uteri) (*Zeitschr. f. Geb. u Gynk*, Vol. 29, 1909) and Montier and Clarri (*Arch. de. med. prov.*, Vol. 32, 1910). A case similar to the one described in this article is reported by Stropseni (*Zeitschr. f. Krebsf.*, Vol. IX, 1910). The interesting feature of this case is that the primary carcinoma had been diagnosed in three different independent ways. The dermatologist, from the appearance of the skin changes, diagnosed the case as secondary skin metastasis caused by a carcinoma within the chest. The writer succeeded in locating the primary carcinoma bronchoscopically and the pathologist, from the appearance of the metastatic cells, concluded that the primary carcinoma must be situated within the bronchi. The pressure of the infarcted glands forming a large tumor together with that of the infiltrating secondary skin metastasis brought about a stenosis of the trachea and finally an excessive edema of the larynx, that could not be relieved by tracheotomy. The dislocation of the trachea and consequently of the tracheal incision, furthermore the prolongation of the life of the patient by inserting a bronchial tube instead of a tracheal canula add to the interest of the case.

I wish to express my thanks to Dr. L. Oulmann for the clinical diagnosis of the skin affection and to Dr. E. Schwartz for the pathological report.

DISCUSSION.

Dr. Mayer said that it was to be regretted that the lateness of the hour prevented the discussion of some of the interesting points suggested by this case. He congratulated Dr. Glogau on the opportunity of reporting such a case.

PHILADELPHIA LARYNGOLOGICAL SOCIETY.

Regular Meeting, February 18, 1913.

DR. ROSS HALL SKILLERN, CHAIRMAN.

Anatomy of the Static Labyrinth. DR. M. STROUSE.

Within the petrous portion of the temporal bone, there is located two special sense-organs, that of hearing and the so-called equilibrium function (derived from the epiblastic layer) and all contained within the so-called labyrinthine capsule. We speak of an osseous and membranous labyrinth. The osseous labyrinth is composed of compact bone, and is divided into three essential parts; the cochlea anteriorly, semi-circular canal posteriorly, and vestibule intermediately. The cochlea is a spiral tube, 28 to 30 mm. in length, located between the internal auditory canal and tympanum; in the human making two and one-half turns, and terminating in a blind end; at the basil whorl it communicates with the vestibule, is 2 mm. in diameter, and gradually decreases to its superior extremity. The basil whorl is above the jugular bulb, and separated from it by a very thin lamina of cancellous bone; internal carotid artery in front and external to the cochlea, and also separated by a thin layer of spongy bone.

Semi-circular canals: Three in number, external, superior and inferior. Each canal has an enlargement at one end, called ampulla; ampulla of superior canal lies above that of the external canal, and that of inferior canal, inferiorly and medianward. The canals have five openings into the vestibule, external canal two, and ampullar and nonampullar opening; superior and posterior canals have an ampullar opening, while at the non-ampullar end they unite and open conjointly into the vestibule. According to Shoenamann (Braun and Friesner) planes of angles of canals are very inconstant; external is rarely horizontal, the angle between external and posterior most constant. Canals form two-thirds of the circumference of a circle and are 7 to 8 mm. in diameter. External canal exposed on the median wall, and superior and posterior to facial canal, and therefore, an important surgical landmark in the mastoid operation; is seldom injured in operative procedure, but a favorite site for fistula in the suppurative process of middle ear.

The Vestibule: An irregularly rounded, bony cavity, 67 mm. in length, 3 to 4 mm. in width, 4 to 5 mm. in heighth, contents about 1 minum (Politzer) into which opens posteriorly and superiorly the three semicircular canals and anteriorly and interiorly the lowest cochlea whorl. On inner wall, a ridge; the crista vestibuli divides the vestibule into two recessus, ellipticus and sphericus; aqueductus vestibuli, and macula cribrosa, open into recessus ellipticus. Externally, oval window for footplate of stapes. Briefly, the osseous labyrinth lies within the petrous portion of the temporal bone and there are certain exposed portions,—posteriorly on the median wall, the prominent portion corresponding to the convexity of the external canal, anterior to this the facial canal, containing the seventh nerve, then oval window for the foot-plate, finally the promentory corresponding to the cochlea, inferiorly the round window, the plane of which is at right angles to the median tympanic wall. On the superior surface eminentia arcuata marking convexity of superior canal. On superior median surface. internal auditory canal, for accommodating the internal auditory artery, and seventh and eighth nerves; immediately under this canal the aqueductus cochlearis and ductus perilymphaticus, and about 1½ cc. external of this the aqueductus vestibuli corresponding to location of saccus endolymphaticus. Membranous labyrinth corresponds in contour to osseous with one exception, in place of one vestibule we have two membranous sacs, utriculus in the recessus ellipticus and sacculus in the recessus sphericus. The sacculus is in communication with the membranous cochlea, through the ductus reuniens. The utriculus is in direct communication with the three semicircular canals by five openings. From the sacculus springs the ductus endolymphaticus, from the utriculus a short duct uniting utriculus with ductus endolymphaticus, called the ductus utriculo-saccularis. Bony canals about eight times the size of the membranous. Membranous ampulla almost the size of bony ampulla. Between membranous and bony labyrinth, the perilymphatic space containing perilymph, and its intracranial outlet is through the aqueductus cochlearis, where it spreads over the subarachnoid space. It is the avenue by which infection may reach the brain. Endolymphatic space is within the membranous labyrinth. Is a closed canal, containing endolymph, and its intra-cranial termination is called saccus endo-lymphaticus, located between the two layers of the dura at aqueductus vestibuli. The membranous canal contains three separate anatomic and functionating highly specialized sense organs, the first located in the cochlea, and called the organ of Corti. I will not describe it, as it belongs less to the symposium than the other two. Second, the crista ampullaris, three in number, one for ampullar end of each canal. Third, macula acoustici, two in number, one each for utriculus and sacculus. The crista ampullaris, as its name indicates, is a ridge and on the surface of which we find sense cells of neuro-epithelium, containing cilia, and alternating with supporting cells. The hairs of neuro-epithelium (about 20 to 25 microns in length) are held together by an adhesive substance, and surmounted by a cupola; the crista protrudes into the cavity of the ampulla, and is the organ which receives the impact of moving endolymph in the canal, physiologically taking place when we move our heads in curved lines. The macula acoustica is an elliptical area in close contact to membranous sac, containing neuro-ephithelium or special sense cells, alternating with supporting cells, on the surface of which is a gelatinous mass, containing crystals of calcium carbonate, or so-called odeliths (2 to 30 microns in diameter). It is by reason of the drag of these crystals en masse on the cilia of the cells which gives us the impression of our position in space (static function), and, too, our sense of direction of motion in straight lines, as distinct to the function of the semi-circular canals in curved lines.

Turning Test. · DR. HERBERT M. GODDARD.

As a result of careful experiments, Barany developed an accurate method for the determination of the reaction of the semi-circular to turning. In order to make the examination the patient is placed in a revolving chair, and instructed to hold firmly so as to prevent toppling over. Some experimenters have the patient wear dark glasses, although that is not a requisite. The examiner holds a stop-watch in one hand and with the other turns the patient or has an assistant do the turning.

The turning should be made as nearly uniform as possible and should consume about two seconds for a complete turn, that is 360°. Turning ten times usually produces the maximum amount and duration of after-nystagmus.

When it is desired to examine for horizontal after-nystagmus to the right, we must turn the patient to the left. If we examine for rotary after-turning-nystagmus, to the right, the patient's head is inclined 90° forward and the patient turned to the left; after making ten complete turns, the patient is brought to a sudden stop when the examiner starts the watch and makes the observation. Just as soon as nystagmus ceases the watch is stopped. If the observations are correct the watch should record the exact duration of the after-nystagmus. If there is any doubt, it would be well to have the findings proved by repeating the act, providing the patient is not too much affected by first experiment.

The reaction of the semi-circular canals to turning is in proportion to the duration of the after-nystagmus. The average duration of after-turning-nystagmus is between 20 and 22 seconds for the horizontal, and between 23 to 26 for the rotary.

Barany, in some 200 experiments with normal, and others with affected ears but yet no complaining of vertigo, found the average duration of horizontal after-nystagmus after turning ten times to the left, forty-one seconds, and to the right, thirty-nine. Mackenzie in his article states he does not believe after-turning-nystagmus thoroughly reliable unless the patient has a fixed object straight ahead. Barany claims that duration of after-nystagmus diminishes after 50 years of age.

Right here I may add that it is claimed by Barany and Mackenzie that after-nystagmus varies according to the number of times the subject has been turned, but proportionately less where the turnings are less than ten and any greater number of turns than ten seems to diminish, rather than increase, the duration of after-nystagmus.

Barany refers to what he calls after-nystagmus which frequently occurs in patients who have turned twenty or more times; in these cases the subject shows, first, a very pronounced after-nystagmus in the usual direction, which ceases rather suddenly followed by a small excursioned nystagmus in the opposite direction to the after-nystagmus, that is in the direction of the turning which produced it.

Since we have learned the semi-circular canals of one side are capable of producing nystagmus to either side, it is of importance to know just how much the after-nystagmus to one side is due to the irritation of the same side, and how much to the irritation of the semi-circular canals of the opposite side.

Ewald's experiments have shown that mechanical forcing of the endolymph toward the ampulla of the horizontal canal produces nystagmus to the same side, while suction produces the opposite movement of the endolymph and with it the opposite nystagmus. In a normal case it is impossible by turning to produce endolymph of one side only.

Diagnosis of Suppuration of the Labyrinth. Dr. Geo. M. Coates.

I desire to call attention to the etiology and pathology of this disease. In practically every case where the labyrinth is invaded by pyogenic micro-organisms the source of the infection is in the middle ear, either an acute or chronic suppurative otitis media. It is at times secondary to circumscribed or diffuse serous labyrinthitis, and is to be differentiated in its early stage from these two diseases. Once the inner ear has become infected its pathology is similar to that of an acute, and later a chronic middle-ear suppuration. There are two stages in diffuse suppurative labyrinthitis, the acute or manifest stage, and a chronic or latent stage. The history of the case is very important. The attack begins abruptly with total deafness, vertigo, nausea and loss of equilibrium. There are no febrile symptoms or pain. Spontaneous rotary nystagmus toward the sound side is always present, lasting usually several weeks. In the Weber test, the sound is lateralized to the healthy ear, while the Rinne is negative. Total destruction of the static labyrinth is shown by its non-reactibility to the caloric, turning and galvanic tests as demonstrated in other papers this evening.

DISCUSSION.

Dr. Geo. W. Mackenzie: At the request of those participating in the symposium, I have consented to demonstrate a few of the tests practiced in my examination of all cases of middle-ear suppuration. I believe the subject of the labyrinth and the diagnosis of labyrinthine diseases to be one of extreme importance to the otologist, in fact no one can practice otology successfully without an intimate knowledge of this subject.

I have with me a patient who has kindly consented to be subjected to the turning and the caloric tests. Aside from the fact that the patient has been operated on radically for chronic middle-ear suppuration of both sides, the history for our purpose is unimportant.

Let us try the turning-test first. Before doing so, it is important to observe carefully for any spontaneous nystagmus that may exist. My method is, as you will observe, to have the patient look straight ahead at some distant object, to relax as far as possible all tension on the extra-ocular muscles, under illumination of the eye-ball, and with the upper lids elevated. A casual observation for a few seconds may result in our not finding it even when present; therefore I would suggest examining for a longer period to observe a slight degree which may manifest itself by movements repeating themselves, say once in every 4 or 5 seconds. Some authors make examination by having the patient look to the extreme left and extreme right, and comparing the intensity and frequency of the movements. This method is inaccurate for the reason that the spontaneous nystagmus thus produced may be purely physiologic, and if the patient looks more intently to one side than the other the observer may be misled into believing that the patient has spontaneous nystagmus of aural origin to the side where the patient looked more intently.

Turning the patient left ten times, with the head erect in order to produce an after-turning horizontal nystagmus to the right, we find the nystagmus quite pronounced and lasting but seventeen seconds. Therefore, we may conclude that the reaction to that side is diminished. We shall try the turing-test to the other side (rotation of the patient to the right), to ascertain the duration of the after-nystagmus to the left, which we find to be fourteen seconds. Again the figures are reduced. We may safely conclude, therefore, that the patient's left labyrinth is not functionating perfectly, else the duration would have been nearer twenty-four seconds.

Let us try turning the patient ten times, with the head forward 90° in order to elicit the duration of the after-turning rotary nystagmus to the two sides. Again we find the figures reduced to the two sides, but more so on the left, which only corroborates what we have previously found by turning the patient with the head erect.

This test, like that of the galvanic reaction test, is a quantitative one, in contra-distinction to the caloric test, which is purely a qualitative one. In other words, with the turning-test we are more or less able to tell varying shades or intensities of internal ear affections, whereas the caloric test tells us only of the presence or absence of total loss of function.

In making the caloric test we should first ascertain by otoscopic examination the presence or absence of certain conditions which may interfere more or less with the making of the tests for which we must make due allowance, to-wit: atresia of the canal, furuncles, foreign bodies cholesteatoma, large polyps, etc. Besides, we must observe the same rules as laid down above when making the turning tests, i. e., the presence or absence of spontaneous nystagmus, its direction and intensity. Let us begin by syringing the left ear with hot water. After a few minutes you notice, with the patient's head erect, rotary nystagmus to the left, often appearing late as in this case after the use of the water. The intensity of the reaction is usually less with the use of hot water than with cold for the reason that the difference between the normal body temperature and the hot water, as hot as the patient can tolerate, is less than the difference between the body temperature and cold water (say 50° F.). With the cold water in the right ear you observe a very pronounced rotary nystagmus to the right side, accompanied by some nausea. To cut short the duration of this reaction we may begin to neutralize with the use of hot water, the effect of which you observe is fairly prompt. To demonstrate the fact that the caloric reaction is due to currents of endolymph produced in the canals by changing the density of the fluids with the use of cold and heat, we shall try one other experiment.

Let us turn the patient's head laterally to the right. With the cold water syringed into the left ear you observe the patient manifests a pronounced horizontal nystagmus to the left or same side; after observing it let us see what happens when we turn the patient's head to an upright position, almost immediately you observe that the nystagmus swings to the right or opposite side and becomes rotary in character. You will note that in all of these tests the patient was directed to look straight ahead. I wish to add that the nystagmus which is manifested while the patient is attempting to look straight ahead is always reliable, while that which can be observed only when the patient looks intently to the side is never reliable, and I would advise that you observe the same precautions. I appreciate your calling on me and am glad of the opportunity of making these demonstrations.

DR. ALEX. B. RANDALL: I have not made a very extensive use of the various tests given here this evening, as I find them exceedingly uncomfortable to the patient, and in those cases where it is particularly uncomfortable it is difficult to determine whether the result is obtained from hysteria or whether the trouble is genuine, and often the results are almost disastrous, and I have felt restrained in using these tests for that reason.

The fistula test which has been spoken of is one by which means we are able by pressure and suction to influence the internal labyrinth. I have seen time and time again individuals in a hysterical condition, who had never had suppuration of the ears, but who would drop over in the chair by even a deep finger pressure. So that while these tests are of great value, particularly in those cases where the functionating power is greatly lowered, it is very important to recognize whether the diseased condition remains or not.

BOOK REVIEWS.

Geschichte der Ohrenheilkunde. (History of Otology.) By PROF. DR. ADAM POLITZER, Vienna. Volume II (1850-1911), Pp. 484 with 29 photographs on 29 plates. Verlag Ferdinand Enke, Stuttgart, 1913. Price, M. 24.

The first volume of this splendid contribution to the history of otology by our esteemed teacher and eminent author, Hofrat Politzer, presented in chronological order the growth of otological science from its incipiency to 1850. A comprehensive review of Volume 1 was published in the December, 1907, issue of THE LARYNGOSCOPE.

The recently published second volume of this history of otology includes the active and more progressive period of our science from 1850 to 1911. This consists of a formidable volume of 500 pages and records the progress of modern otology, not only in chronological order, but in classified form, accompanied by an elaborate index of the most original work in every phase of the science that has been accomplished during this active period.

Of the eighteen sections of the first part, five are from the pen of Hofrat Politzer and thirteen by various teachers in the otological department of the Vienna University.

The first chapters on the "Anatomy of the ear," comprising the external and middle ear, are by Prof. G. Alexander and are presented in the usual minute and painstaking style of this able writer. Short chapters by Docent W. Kolmer on the "Historical Evolution of the Organ of Corti," and by Prof. Marburg on the "History of the Nervus Octavus," conclude the section on the antomy of the ear.

The section on the physiology of the ear by Prof. Kreidl and Docent Barany includes a detailed review of the evolution of the sound-conducting and sound-perceiving apparatus with special emphasis on the vestibular apparatus.

The physiology of the hearing is traced by Kreidl from the time of Mueller and Helmholtz and many of the theories and principles presented concerning the function of the drum membrane, ossicles and Eustachian tube; Barany offers in his subdivision on the "Vestibular Apparatus," a brief resume of the contributions of Flourens, Goltz and Ewald, and his own contributions from a diagnostic point of view. An historical resume of the problem of bone-conduction by Docent H. Frey concludes this section on the physiology of the organ of hearing.

One of the most important sections of this work is the one on "Pathological anatomy," by Hofrat Politzer. This begins with the pioneer work of Toynbee and his important published reports of post-mortem findings in 1659 otological cases and their careful analysis, and is closely followed by contributions of von Troeltsch and a monograph by Schwartze on the "Pathological anatomy of the ear," and valuable contributions by Profs. Habermann on "Tuberculosis" and Steinbruegge on "Pathological conditions of the labyrinth."

"Methods of examination," by Docent Kaufmann, "Diseases of the auricle and external auditory canal," by Docent Leidler, "Diseases of the drum membrane," by Prof. Pollak, "Historical development of catarrh of the middle ear, by Prof. Alt, "Middle-ear suppuration," by Prof. Gomperz constitute chapters 4-9, inclusive. The concluding paragraph of the histories of infectious diseases of the middle-ear cavity include contributions on tuberculosis, scarlatinal, morbillar, typhoid, influenzal and syphilitic invasions of the middle-ear cavity together with an important bibliography of this field are contributed by Hofrat Politzer.

Chapter 10 on the "History of the mastoid operation," and chapter 11 on "Suppuration of the Labyrinth," are interestingly elaborated contributions by Hofrat Politzer.

Prof. H. Neumann presents Chapter 12 on "Intra-cranial otitic complications," and an extensive monograph including extra-dural abscess, meningitis, brain abscess and sinus phlebitis with their respective comprehensive bibliographies.

In the next chapter on the "History of otosclerosis," Hofrat Politzer finds himself in an especially familiar field, for it was he who first directed attention to a primary affection of the labyrinth capsule as the etiological factor in the development of typical otosclerosis. This chapter is, therefore, given unusual prominence.

"The pathology of the labyrinth" is a well-written historical sketch by Prof. G. Bruehl. "Neurosis of the organ of hearing," by Dr. Conrad Stein, "Reflex neurosis," by Docent H. Frey, "Syphilis of the labyrinth," by Dr. Oskar Beck; and "Injuries to the ear," by Dr. Oskar Mauthner, are interesting contributions in consecutive order.

Prof. Victor Bremer writes the concluding chapter and treats this important question *in extenso*, cites the statistics and etiology of deaf-mutism refers to the epoch-making contributions of Meniere, Wilde, Moos and others, and records the development of the instruction for deaf-mutes with special emphasis on speech-reading as the latest and most effective method of instruction for this class of patients. z

The second part of this volume presents the development of otology in the various countries from 1850 to 1911. Much interesting data is furnished by the several contributors to this section and a chronological record of the progress made in the different parts of the world presents good reference and a comprehensive review.

We cannot refrain from commenting on the rather unsatisfactory and incomplete record furnished by the collaborators for America. In a volume of this kind every country should receive due recognition. The activities in, and contributions to American otology during the past sixty years should, it seems, entitle us to more liberal consideration. The American Laryngological, Rhinological and Otological Society, which has been such an active and effectual factor in the development of otology in this country, is given but scant mention in a few lines under the caption of otological societies.

The record of otological instruction in the various universities and medical schools in the United States is quite incomplete. In the biographical sketches, grouped in cities, many well-known otologists are given but scant mention or are entirely omitted. The American editor is scarcely to be held responsible for these discrepancies and oversights as, in most instances, they were due to failure on the part of the otologists to fill out the blanks furnished them.

This volume completes Politzer's history of otology, a work that is destined to go down in otological literature as a permanent classic and valuable book of reference. The entire otological profession is under lasting obligations to our esteemed teacher and venerable colleague for placing such a work at its disposal.

Text-book of Diseases of the Nose, Throat and Ear for the Use of Students and General Practitioners. By FRANCIS R. PACKARD, M. D., Professor of diseases of the nose and throat in the Philadelphia Polyclinic Hospital and College for Graduates in Medicine, etc., Second edition, pp. 277 with 145 illustrations. J. B. Lippincott Company, Philadelphia, 1913. Price, $3.50.

The early appearance of the second volume of this practical text-book is the most conclusive evidence of its popularity and acceptability. We note in the revised edition that the chapter on diseases of the tonsils and adenoid growths with the new form of operation devised for the disposal of these neoplasms has been entirely rewritten. There has also been added a description of the processes employed in tracheo-bronchoscopy and esophagoscopy. The author adheres to the original purpose of this book, which was to furnish a practical working manual for the medical undergraduate and a ready reference book for the post-graduate in oto-laryngology.

The author's many years of experience as a post-graduate teacher and his practical, concise form of expression have resulted in one of the most practical manuals of oto-laryngology recently published.

Diseases of the Ear, Nose and Throat, Medical and Surgical. By WENDELL CHRISTOPHER PHILLIPS, M. D., Professor of Otology, New York Post-Graduate Medical School and Hospital, Surgeon to the Manhattan Eye, Ear and Throat Hospital, etc. Second revised edition; pp. 847, illustrated with 545 half-tones and other text-engravings, many of them original; including 31 full-page plates, some in colors. F. A. Davis Co., Philadelphia, 1913. Price, $6.00 net.

A rapidly exhausted first edition and the prompt appearance of a second edition is substantial testimony of the merits of this book. In this second edition the author has amplified the subject-matter of recently developed fields of oto-laryngology. Radiography of the mastoid process, a short article on status lymphaticus, a description of the electric naso-pharyngoscope, a paragraph on tonsil enucleation and the approved technic for its accomplishment, and the improved methods for the control of tonsillar hemorrhage are among the new themes presented in this second edition.

Diseases of the Ear. By PHILIP D. KERRISON, M. D., Professor of Otology. New York Polyclinic Medical School and Hospital, Junior Aural Surgeon to the Manhattan Eye, Ear and Throat Hospital, etc. Pp. 588 with 331 illustrations in the text and 2 full pages in color. J. B. Lippincott, Philadelphia, 1913. Price, $5.00.

It is a difficult problem for an author to publish an acceptable hand-book or text-book in a speciality of medicine or surgery unless that volume incorporates the personal experiences of the author and mainly reflects his originality and individuality.

Dr. Kerrison has successfully developed this feature in the present volume in that he discusses authoritatively from a rich practical experience and from a broad point of view the advanced and more modern problems of otology. Special emphasis is laid on lesions of the brain and meninges and the more difficult surgery and physiology of the labyrinth. Another important chapter is that on serum therapy including autogenous vaccines and the production of the Hiss leucocyte extract.

In the section on the operative surgery of the ear the excellent plan of illustrating each successive step of the important operations has been adopted. It is an excellent working-guide to the otologist who may not have the facility of a post-graduate clinic and more expert ear surgery close at hand. Many of the time-honored theories and therapeutic measures which no longer have any bearing on the practice of otology have been eliminated and the practical subject of this field has been made especially prominent.

Hand-book of Diseases of the Ear for the Use of Students and Practitioners. By RICHARD LAKE, F. R. C. S. Eng. Fourth edition revised and enlarged. Pp. 287 with 4 colored plates and 7 original illustrations. Wm. Wood and Company, New York, 1912. Price, $3.00.

There is but one derogatory criticism that may be made of Mr. Lake's fourth revised edition of his excellent "Hand-book of diseases of the ear" namely that it is too brief not only for a treatise or text-book but even as a manual for the under-graduate and practitioner.

The ripe experience of so eminent an authority on otology should be offered in more substantial form and with considerably more elaboration.

Notwithstanding the extreme brevity of the text the author has brought this revised edition strictly up to date, including a graphical though short description of the technic of the labyrinth operation, otosclerosis, effect of labyrinthine pressure, and the status of the semicircular canals in the functional tests.

Vicious Circles in Disease. By JAMIESON B. HURRY, M. A., M. D., Ex-president Reading Pathological Society. Second enlarged edition, pp. 280. J. & A. Churchill, London, 1913. Price, 7/6 net.

This monograph attempts to systematically analyse vicious circles in disease.

The author defines a vicious circle as a morbid process in which two or more disorders are so correlated that they reciprocally aggravate and perpetuate each other.

Vicious circles are classified into seven groups: 1. Organic circles. 2. Mechanic circles. 3. Infective circles. 4. Neurotic circles. 5. Chemical circles. 7. Artificial circles.

Much of this crystalized pathological and physiological data is closely correlated to our work in oto-laryngology and deserves careful perusal.

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ORIGINAL COMMUNICATIONS.

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THE DEVELOPMENT AND EXTENSION OF THE LIMITS OF LARYNGOLOGY.*

DR. GEORGE A. LELAND, BOSTON.

To this, the thirty-fifth annual meeting of the oldest national laryngological society in the world, it is my bounden duty and great privilege to extend a most cordial welcome and I do it with due appreciation of the great honor which you have conferred upon me by adding my humble name to that noble list of my predecessors in this high office, the Nestors of our specialty in America. For in common with them, I consider it the highest honor which can come to any man in our branch of medicine: and I may add that it is one which I had no right to expect, having apparently deflected from strict laryngology to the study and practice of what should be considered its most important branch.

The more I have read of the history of our association and become imbued with its spirit, the more honor and respect and admiration I have for those twenty-one gentlemen who met in Buffalo, June 3, 1878, and projected our cherished association. And of these founders we rejoice that after thirty-five years we still have on our list of active fellows, four, and on the retired list, one. And there are three others still living, one of whom is yet in active practice in a wider field: so that of those who founded the world's first national association for the study of laryngology, there are still eight living. And as is so often the case, we can well say they laid the foundation for a structure greater than they knew, or could, perhaps, even imagine. And we must admire their intrepidity and determination, for in those early days the use of our mirrors was looked upon with doubt, disbelief, and ridicule. Dr. Elsberg in the first annual address expressed this, as quoted by Delavan in his masterly address in 1894, when he said, "The road has been a rugged one, and few of you can realize to-day the uphill work, the obstacles, and obloquy encountered." Even in the writer's memory, back in 1883 or 1884, how oracular was the advice of his medical and surgical friends that exclusive throat practice would never be successful, and more than one general practitioner then turned up his nose and with a contemptuous smirk said "playthings" when the laryngoscope was laid out for examination of a tuberculous larynx. And yet one of them had to acknowledge its efficacy when euthanasia was brought about by swabbing out such a larynx.

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*Presidential address delivered to the thirty-fifth annual meeting of the American Laryngological Association, Washington, D. C., May 5, 1913.

The field has widened enormously during the last thirty-five years. One of our early presidents deprecated the addition of the nose to our subject of laryngology, but the discovery of cocain made it inevitable that it and its adnexa should be added and studied and mastered. And since the ear is also an accessory cavity. nine-tenths of whose diseases originate in the mucous membrane of the nose and naso-pharynx, the preventive measures against, as well as treatment of, aural disease are to be carried out in the regions falling under the jurisdiction of the American Laryngological Association. This was brought out in 1883 in a paper wonderfully erudite for that time, written by Dr. Beverley Robinson, one of our former members, and published in the Transactions of that year.

Preventive medicine is the great subject prominently brought to our attention at this meeting because of the great fame of the President of this Triennial Congress in this regard. His phenomenal work in Cuba, and in the Canal Zone where he has made the pestilential tropics inhabitable, is one of the wonders of the world: and the name of Gorgas will ever shine as one of the bright and particular stars in the galaxy of American medicine. This is attested by the fact that whereas during the French occupation, daily a train-load of dead was taken to that most populous of graveyards at Ancon, so numerous were the victims of tropical zymotic disease that records could not be, or at least, were not kept. Now the death rate is reduced to that of the most healthful parts of the earth. While Col. Gorgas has saved his tens of thousands, it falls to each and every one of us to be enlisted in the cause of preventive medicine. And this is the spirit of our association and of our profession, my brethren, to prevent as well as to cure, to destroy our business and deplete our pockets for the good of suffering humanity. So now the modern Samaritan on the Jericho pike not only heals the sufferer by the wayside, but seeks out and destroys the cause of his malady, whether intrinsic or extrinsic, so that there will be fewer sufferers from the same cause for the exercise of the benevolence, skill, or greed of other Samaritans.

Our founders builded wiser than they knew when they chose the throat as the field of their specialty, for here, as shown by modern bacteriology and clinical observation, is the port of entry of many of the diseases, nay, we might almost say most of the diseases to which poor human flesh is heir. The New York daily which said "The nose is the source of all our woes" was not far from right, but would have been nearer right if it had said the throat and nose. For it is well established that here may enter through the lymphatics of the fauces and nose micro-organisms which cause tuberculosis, nephritis, endocarditis, sepsis, cerebro-spinal meningitis, acne, erythema nodosum, erysipelas, etc., and by extension up the Eustachian tube, aural disease of all sorts leading to deafness, pyemia, meningitis, intra-cranial abscess, and so on and on. And it is in our province of preventive medicine to obviate all this, to put the upper air passages into the best possible shape, and to teach our patients to use them: I repeat, to teach the proper and continuous use of them; for evidently this is a most important part of our work; since this gives nature the chance to use the wonderful measures she has provided for the protection of our organism.

It is not necessary to prove this by going into the physiology of the nose and of the faucial lymphatics before this audience but it is desired to emphasize the contention that the laryngo-rhinologist is the best and most rationally obvious aurist because in his hands lies the prevention of those pathological conditions which bring about so much pain, distress, inefficiency, misery, and danger, and because in his region is the best point of attack for either acute or early chronic middle-ear disease. In a speech at the banquet of the Ninth International Otological Congress in Boston last August, one of the first otologists in America, and hence, of the world, advocated the study of pure otology untrammeled by other branches of the upper air passages. But it is evident to the members of this American Laryngological Association without doubt that if the nose and naso-pharynx could be put into proper shape and continuously used, the occupation of the aurist would be gone, except for the effects of traumatism, and perhaps for the infections, though it is evident that these would be largely reduced except again for invasions of the internal ear from such affections as mumps, pregnancy and some forms of meningitis.

It has been said above that in our region lies the best point of attack for acute otitis media, and it may not be out of place to say that many cases of acute inflammation of the middle ear may not only be prevented but also aborted, even when the drumhead is red or even bulging, by relieving the congestion and engorgement of the naso-pharyngeal lymphatics, which means the adenoid operation especially including the fossae of Rosenmueller. This has been the writer's practice for twenty-five years in private when possible, and in hospital practice when opportunity offered. Many inflamed and acutely distended drumheads have been saved perforation by the needle or otherwise with all the annoyance of discharging ears consequent thereon, because drainage was established from within.

And so also in the region of our activities are to be found the ports of entry for infections of the cervical glands. And *we* know how universally we find that these unsightly tumors are preceded by diseased adenoids and tonsils when acute, and how equally frequently chronic indurations here are accompanied by chronic disease of these lymphatic structures. In fact, in no wise can here the diagnosis be complete unless the condition of the tonsils and adenoids be thoroughly ascertained. And yet how often is it the case that the general surgeon performs his extensive dissection for the removal of these glands and leaves the morbid source untouched and probably unknown.

So that here again is our work preventive if it results in the removal of intra-cervical disease before the extra-cervical indurations have broken down and become fluctuating. And by the same token, the most effective treatment of early cervical adenitis is the thorough ablation of our old friends, infected tonsils and adenoids. Moreover, it is by no means necessary to consider these glands tubercular even though the pathologist may find a few bacilli in their substance. Dr. G. Sims Woodhead, in his illuminating article on the "Channels of infection,"[1] showed conclusively that these glands can take care of and destroy infectious matter passing down the lymphatic chain, including even tubercle bacilli. Thus does preventive medicine come into our province where we seek to make effective Nature's abundant protective measures.

And so from our restricted region the field is ever broadening. Headaches, neuralgia, that terrible tic douloureux which inflicts so much misery and leads even to suicide—these often find their origin in the peripheral distribution of the fifth nerve in the nose and its accessory cavities, when pressure from retention of pus or from contact can very often be found if sought, the relief of which would obviate the necessity of operations on the nerve, and especially the removal of the Gasserian ganglion, which is so often not successful permanently or even for a short time.

Moreover from the original demarcation of laryngology we have not only gone upward, but the introduction of Kierstein's method of direct laryngoscopy has taught us to go downward, so that not only the larynx, but the trachea and bronchi are open to our vision. And furthermore, behind the larynx the esophagus and even the stomach can now be penetrated by illuminating tubes and ingenious instruments, the products of the consummate skill and inventive genius of Killian, one of our Corresponding Fellows, and of Jackson and Mosher, and other active fellows of our great association.

And now, as a final compliment to us, the studies of the pituitary body, i. e., the hypophysis cerebri, have shown the desirability of its removal and the most obvious way and the most usual, is through the nose, the operation of resection of the septum having shown the best way to enter the sphenoid and to reach the gland by removal of its roof.

So that it can now be said without fear of contradiction that the confines of laryngology as laid out by our noble founders thirty-five years ago have been extended till they embrace most of the upper half of the body—from the umbilicus to the crown of the head. Truly in the language of that doughty warrior, Commodore Perry, "We have met the enemy and they are ours." And it may be added that the aggressive spirit of progress of the American Laryngological Association will advance in the future as in the past. When other obstacles to advancement appear, we shall quote again from one of our greatest generals, who, in 1863 was called "Unconditional Surrender Grant:" "I propose to move immediately upon your works."

And yet in the accurate knowledge and prophetic vision of our first president much of this field was outlined in his definition of the boundaries of our specialty. To quote from his address, p. 36,[2] "The throat specialist of to-day is called upon to treat all these diseases, and more, viz., affections of the larynx and trachea; of the root of the tongue, valleculae and hyoid bone; of the tonsils, palate and uvula, of the pharynx, pyriform sinuses and esophagus; of the pharyngo-nasal space, nasal passages and frontal sinus; of the thyroid body, parotid and sublingual glands; and of the areolar tissue, and other structures that make up the anterior portion of the neck.

"Besides, as the mucous membrane of the throat is continuous with that of the whole alimentary tract on the one hand, and that of the bronchi and their ramifications to the air cells in the lungs on the other, and through the pharynx the nasal fossae extends to the sphenoidal, ethmoidal and maxillary sinuses, through the lacrimal duct to the conjunctiva, and through the Eustachian tube to the mastoid cells and tympanum—certain diseases of these regions must, sometimes, be considered by the laryngologist in addition." And then he makes this most pertinent and forceful remark, "I need not here dwell upon the fact that the connection between throat diseases and other diseases of the body is so intimate, that no one is competent to be a throat specialist without a previous thorough medical education and considerable general clinical experience." It is to be feared that this is not always heeded and acted upon.

During the past year no startling discovery has come to notice in our specialty, but in the process of sifting out the chaff and conserving the grain, notable advance may be recorded towards perfection in endoscopy of, and treatment in the bronchi, esophagus, nose and naso-pharynx. Vaccines and serums and radium are being tested and exploited, so that in the near future we may expect them to take their proper places in our therapy. The great mountains of tuberculosis and of malignant disease yet remain unconquered, though the former in early stages seems to be more or less amenable to climatic and dietetic treatment. The early surgical removal of localized malignant disease seems, however, to be making some progress.

Much has been said in the thirty-four preceding presidential addresses on the subject of education of the undergraduate, how much of laryngology could be crowded into his short and over-crowded curriculum; of the post-graduate, how much could be shown and taught him in the few weeks or months he could devote to the subject, i. e., how much of a near-specialist we could make of him.

But there is a large class still which has not been mentioned—the general practitioner. And it is, it seems to me, (aside from the pleasure of renewing delightful acquaintance) the one great object of these annual meetings to discuss questions and measures of utility and importance, and to put out our conclusions in an attractive, concise, and authoritative form so as to demand the attention of every doctor. And to this end our papers should be widely spread through journals of general medicine, and not embalmed in our volumes of Transactions only, valuable though they may be and are. In saying this I am not unmindful of the great circulation of the *Journal of the American Medical Association* and of the two great New York journals, but I suggest still wider dissemination, so that dangerous conditions may not become fatal because unrecognized with a laryngologist or bronchoscopist near at hand but not consulted.

"Of making many books there is no end, and much study is a weariness of the flesh," was said long before modern medical writings were even conceived of. And yet it is our duty and privilege to add to them, to publish the results of our pioneer work for the guidance of those whose field is less restricted. And for the busy practitioner the short, concise article dealing with the commoner, yet sometimes puzzling and obstinate maladies to be found in the upper air passages, which he may almost daily meet, is more acceptable than the long, learned, scientific and often largely historical monograph on those diseases which even the specialist rarely sees. To be a guide, a teacher, an aid, it is well to write clearly to the point. To show our learning, our industry, the labor of our research and the extent of our experience, we can afford to be comprehensive, discursive, prolix and ponderously scientific, but then our readers will be largely, if not exclusively, specialists like ourselves.

At the beginning of the nineteenth century, all of medical knowledge, as well as the whole range of human knowledge of that time was compassed by the brain of one man, Dr. Thomas Young, of St. George's Hospital, and just a century ago this year (1813) was published his first book, "Introduction to medical literature, including a system of practical nosology," a work of great labor and of great assistance to students and investigators. But at that time the whole of medical literature would not equal that of any one of our modern specialties, the mastery of which, together with a necessary working-knowledge of general medicine or surgery, taxes severely enough the minds of even our greatest intellectual prodigies.

It is my sad duty to record that three of our fellows have joined the "innumerable caravan" during the year.

Dr. C. E. Bean, of St. Paul, was admitted in 1880. He seems to have contributed a few articles in the early years of his membership, and was a genial fellow, though latterly little known.

Dr. James E. Newcomb, our last president, died two and a half months after he relinquished the office. At the meeting in Philadelphia, 1911, it was, alas! too obvious that he was in failing health, and we all heartily approved of the action of the nominating committee in conferring upon him what he considered "the highest honor in the power of American laryngologists to bestow," and we hoped it was not too late. He served us faithfully and assiduously for eleven years in the office of secretary, during which time our membership had doubled. Learned, skillful, philanthropic, influential, a hard worker and genial good fellow, his memory will ever be enshrined in the hearts of those who had the good fortune to know him and especially in your hearts, my brethren of the American Laryngological Association.

And last Tuesday, on April 29, passed on our former president. Dr. C. H. Knight. He came into the association in 1885, served as secretary 1889 to 1895, and was president in 1896. He was a hard worker, a learned professor, contributed much to our Transactions, and was, withal, a splendid, kindly, genial gentleman. It was always touching to me when I heard his New York confreres refer to him as "Charlie Knight." It showed their familiar, affectionate regard.

Newcomb and Knight—two great souls have passed on to their well deserved and abundant reward, and have left a desolation in the ranks of our most highly esteemed, great association. I cannot better express what is in my mind to-day than to quote from an eminent New England prelate, "Life is so very short for all of us, shorter still to those of us who are eager to do something that will not perish when we die. The years fly by at a thundering pace which frightens us with its dreadful speed. And when it is over and gone, the one thing that will last will be the memory that we have left behind us in the hearts that loved us, in the souls which understood our purposes, and which beat in unison with our noblest impulses. That is our only legacy—the only one really worth leaving to history and posterity."

And now, gentlemen, in accordance with the custom of my predecessors, the thirty-fifth annual meeting of the American Laryngological Association is declared open and ready for business, and I thank you for your co-operation in making up the program and bespeak your active interest to carry it out to a successful termination.

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354 Commonwealth Avenue.

INDICATIONS FOR THE CORRECTION OF DEVIATIONS OF THE NASAL SEPTUM BY THE GLEASON OPERATION.*

DR. E. B. GLEASON, PHILADELPHIA.

The title of this paper necessitates a comparison of the advantages of submucous resection for the correction of deviations of the nasal septum over older methods and also involves the question of personal equation. For the individual operator, other things being equal, the operation with the technic of which he is most familiar will be the best. However, for the beginner in laryngology, my method has the advantage of being quick, easy, free from risk and requiring no great skill. Deformity of the tip of the nose never occurs and perforations very seldom; while in case of failure, the procedure does not interfere with a subsequent submucous resection.

Perforations after submucous resections are apparently frequent. If of considerable size and if no scar-covered bone or cartilage is exposed the so-called "scabs" do not collect and the perforations apparently do no harm. Knowing this fact, some operators have advocated the removal of mucous membrane as well as cartilage and bone when it is impossible to elevate the periosteum from the deviated area and thus cause a large perforation. My feeling is that rather than resort to this expedient it would be better to avoid a perforation by converting the resections into a Gleason operation.

As regards deformity following submucous resections from sinking of the bridge or tip of the nose, a distinguished operator who has probably done more than any other American to develop the submucous operation, stated that in traumatic cases, when the tip of the nose is flabby, the submucous operation is contraindicated because of probably resulting deformity, and that my operation, under such circumstances and others, is the proper procedure.

It has been stated that a submucous resection in individuals under 15 years of age interferes with the development of the rest of the nose. If this is the case my method or some similar procedure should be the operation of choice.

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*Read by invitation before the section on Laryngology and Rhinology, of the New York Academy of Medicine, October 22, 1913.

If, in the early stage of a resection, the patient collapses either from cocain poisoning or syncope and it is necessary to finish quickly, it would be better to convert the resection into a Gleason operation. The same is true when a hemorrhage of unusual severity is encountered. The Gleason operation can always be done in less than two minutes.

A submucous resection under ether is difficult and unpleasant. When it is necessary to operate under ether, especially in children, the Gleason operation should be the operation of choice. The same is true of operations on the aged or feeble.

The Gleason operation consists of a U-shaped incision surrounding the deviated area of the septum except above. Because of the leverage involved, the vertical crura are carried as high up as possible. Because the base of the U is an incision through the hard bone of the nasal processes of the maxillary, or through the vomer, it must be made with a saw, a strong Sajous saw being best for the purpose.

Submucous resection is more successful than the older operations mainly because the removal of bone and cartilage completely destroys the resiliency of the deviated area. This resiliency is the chief cause of failure in all the older operations for septal deviation; and the next best way of overcoming it is by means of a quadrilateral flap. I made a rough model of a deviated septum by thrusting a hollow rubber ball through a hole in a piece of cardboard. On this bulging area of rubber I did the Ash operation, at that time the most popular of the operations for the correction of septal deviations. I also performed other operations then in vogue and demonstrated that the cause of failure was the triangular shape of the flaps, and that a quadrilateral flap resulting from a U-shaped incision in the rubber bulb where it bulged through the cardboard, because of the principle of leverage involved, so completely neutralized the resiliency of the rubber that such a flap would not spring back into its original position when pushed inside the rubber ball. Triangular flaps did.

The technic of the operation is as follows: After thorough cocainization, a nasal saw is introduced into the obstructed nostril close to the nasal floor beneath the bulging area. The sawing is horizontal until the saw has penetrated somewhat deeply into the bone. Thus the edge of the saw is gradually tilted up until the direction of the sawing is more vertical. A gush of blood from the unobstructed nostril indicates that the bone has been penetrated. The tip of the saw is now thrust through the opening in the septum and the base of the U-shaped incision is completed by sawing at first backward and then forward. Pains should be taken to see that the base of the U-shaped incision extends well anterior and posterior to the deviation. The vertical crura of the U-shaped incision are best made with knives, one curved on the flat (Seiler knife) being convenient for making the posterior crus of the U-shaped incision. The lower edge of the flap is pushed into the unobstructed nostril with the forefinger-tip and the neck of the flap bent as nearly a right angle as the width of the nose will permit. *The whole success of the operation, in horizontal deviations at least, depends on the thorough bending of the neck of the flap.* The patient remains seated, but the operator should stand up and place his disengaged hand on the top of the patient's head in order to bend the septum upward with greater force. The bone at the neck of the flap breaks with a snap audible all over a large room. The resiliency of that part of the flap is of course as absolutely destroyed as if a submucous operation had been done. The cartilage at the neck of the flap cannot be broken, but it can be bent and kneaded until its resiliency is at least temporarily gone. After the operation, *unless the flap is perfectly flaccid and there is no tendency for the flap to spring back into its former position, the operation will be a failure.* Overlapping of the edges which occurs in all of the older operations on the septum will not prevent this in the least, even if the edges are beveled as done by Watson. The exploiting of the resistance offered by overlapping flaps which occurs in all operations for septal deviation devised before Watson's time, more especially that of Seiler which I did for many years before devising my own, induced Watson to claim that my operation was the same as his and later on a modification. Nothing could be more untrue. One operation depends for success on the utilization of the resilience of overlapping flaps (not originated by Watson), and the other on the destruction of the septal resilience. This is best accomplished as already stated by complete removal of the resilient cartilage and bone by submucous resection, and next best by the use of a quadrilateral flap, which I was the first to employ.

It is very evident that my operation is not indicated where the deviation is high up and the operation is done to secure better drainage from or access to the ethmoid region of the nose. In many cases of this kind better results are obtained by removing the middle turbinate than by operating on the septum. In fact, before operating on a deviated septum the condition of the turbinates should receive careful consideration. If the inferior turbinate opposite the convex side of a deviated septum is so atrophied that straightening the septum will render one nostril so patulous that that nostril is unable to perform its chief function of warming and moistening the inspired air, that is, if after a submucous resection the formerly obstructed nostril is so patulous that you can see through it into the pharynx, the patient will not be benefited, but harmed by the operation.

The operation I devised is also not indicated when the quadrilateral cartilage is large and resilient. In such case probably it will prove only partially successful, and submucous resection is far superior except in the so-called "vertical" deviations where only a very narrow portion of the septum is affected. In such cases, because of the principle of leverage involved in long, narrow flaps, the operation is always brilliantly successful.

After the operation I generally introduce a tube into the formerly obstructed nostril. This is removed and cleansed at the end of twenty-four hours. It is allowed to remain for another twenty-four hours and then permanently removed. In those operations where the resilience of the flap was not destroyed, but there was a tendency for the deformity to be reproduced, I formerly tried to secure at least a partial success by compelling the patient to wear a tube for a week or more. I now remove the tube permanently at the end of forty-eight hours and allow the parts to heal, and if the operation is only a partial success I either destroy the resiliency of the neck of the flap by a submucous incision of the cartilage with a knife or the use of Fetterolf's files, or I do a submucous resection which, as I have already explained, is not rendered impossible by the previous operation. The U-shaped incision is *not within* the deviated area, but *around* it except above, and its scar, therefore, cannot possibly be in the way of an operator who wishes to remove this deviated area by a submucous resection.

2033 Chestnut Street.

AUTOGENOUS VACCINE IN THE TREATMENT OF HAY-FEVER.

DR. P. M. FARRINGTON, MEMPHIS, TENN.

With well-trained minds of the highest order, with wealth and government backing, the laboratories of to-day are elevating medicine by leaps and bounds. Matters of doubt become living facts, and the knowledge of yesterday is disproved in many instances.

So thick and fast do the announcements come that men in active practice have not the time or training to know definitely or weigh with proper judgment the testimony offered. We, therefore, must accept with a certain amount of blind faith the wonderful means placed at our disposal for use in our fight against disease. The subject of immunization by the use of vaccines has appealed strongly to the medical world.

Many investigations have been made in various lines. Some have resulted brilliantly, while others have been failures. Following a happy experience in the case of a chronic discharging ear, where the autogenous vaccine was used, it occurred to me that its use in hay-fever would be indicated. In August, 1911, I tried it out for the first time in a case of five years' standing. The result was most gratifying, and I reported the case at the Southern Section of the American Laryngological, Rhinological and Otological Society, meeting in New Orleans, February, 1912. Throughout the fall of 1912 I treated a series of twenty-five cases with excellent results. With but one exception these cases were of years' standing and had tried every known remedy without relief. All the patients were from my private practice and could be watched carefully.

It was my intention to have these patients under observation before the hay fever season started, that I might correct any abnormality present, such as polypi, hypertrophied turbinates, deflected septum, sinus disease, etc. In other words, I proposed to put the nose in as normal a condition as possible and await the oncoming season. If, despite these efforts, they developed hay-fever, use the vaccine.

This plan did not work for the very good reason that the majority of my patients presented themselves only after the onset of symptoms, or so very little in advance of the time that surgical measures were not to be considered. It thus happened that in this series were several cases of marked deflection of the septum, together with hypertrophy of the turbinates, which should have been operated before good results could be hoped for.

The series was divided into four groups: those that were cured; those that were markedly improved; those that were improved; and those that were failures. The results were as follows: Out of the twenty-five patients treated, thirteen or fifty-two per cent were cured; six patients or twenty-four per cent markedly improved; three patients or twelve per cent slightly improved; three patients or twelve per cent failures.

Of the thirteen patients cured, eight were complicated by asthmatic attacks. Of the six markedly improved, five had asthma. Of the three slightly improved, all had asthma. Of the three failures, all had asthma.

The vaccine was prepared as follows: After the nasal symptoms had developed a sterile platinum loop was passed well up along the middle turbinates, and the film of secretion transferred to sterile agar tubes.

The patients were instructed not to use medicines of any kind twenty-four hours before the secretion was to be removed. Two tubes were used in each case and the combined growth washed off with sterile normal saline solution. The bacteria were then killed by heat, standardized, and placed in two-ounce bottles with inverted rubber nipple for stopper. In this way the vaccine could be drawn out by plunging the hypodermic needle through the nipple, and the danger of contamination reduced to a minimum. In this connection I am glad to say that no abscesses were produced by the injections throughout the series.

The average number of injections was nine. The dose best suited was found to be 200 million every fourth day. Larger doses were tried in a few instances, but no especial benefit noted.

In several cases where the dose was increased to 400 or 500 million, a rather marked reaction with the increase of hay-fever symptoms occurred, necessitating a skip of six or eight days in the treatment. Improvement may not be expected until three doses have been given. Some cases eventually cured did not show improvement until the sixth dose had been given.

In my humble opinion, autogenous vaccine offers decidedly more in the treatment of hay-fever than all other known methods combined. Its indiscriminate use, however, without a careful inspection of the nasal passages, coupled with sufficient skill and knowledge for the correction of gross pathological lesions within the nose, and accessory sinuses, will prove a failure, and will discredit an efficient remedy.

Bank of Commerce and Trust Building.

Operations on Nose in Treatment of Headache. FROESE, *Deut. med. Wchnschr.*, May 15, 1913.

Ten cases are reported which show the improvement in neuralgic and headache conditions following nasal operation. In only one case (where the man did not follow instructions) did slight nausea and fever result. The technic is minutely described. Friese feels that these interventions are not as dangerous as some think, that they are of great benefit and that, with care, they do not cause meningitis. ED.

Primary Syphilis of the Nose Treated with "606." M. ARTELLI, *Boll. delle mal. dell'Orecchio,* June, 1913, p. 126.

It is very unusual for the initial lesion to be in the nose. The case reported was in a man of 28 years; neoplastic type of lesion in right anterior portion of septum; hard indolent swelling in right submaxillary glands; Wassermann positive; roseola appeared shortly. Salvarsan was administered intravenously; after forty-eight hours improvement in nasal condition. Artelli recommends a combination of salvarsan and Hg. ED.

ETHMOIDAL ABSCESS CAUSED BY THE BACILLUS FUSIFORMIS OF PLAUT-VINCENT.

DR. F. H. BRANDT, BOISE, IDAHO.

Not until recently have we been regarding an ulcerative process, commonly known as Vincent's angina, as an infection of the throat only. Of late, however, in response to closer investigation, interest is growing as to the location in which this has been found.

Fruehwald[1] cites an interesting case of a little girl who had swallowed a sewing needle, which, upon examination, was found sticking in the posterior pharyngeal wall opposite the entrance of the larynx. This was extracted, but the needle broke off, and further attempts to remove the remaining piece were unsuccessful. In the next few days fever and rigidity of the neck developed, and an external operation was done to explore the tract of the needle. The needle was found in a fistulous tract with some pus. Meningitis developed and the patient died. The autopsy showed meningitis and brain abscess due to the bacillus fusiformis. Rothwell[2] publishes a case with chills, high temperature, severe pain, persistent cough and abundant watery-blood sputum, which was full of the Vincent organisms. Tunicliffe[3] gives a case of general pyemia with multiple abscesses in various parts and organs of the body, following an appendicitis.

Ghon and Mucha[4] published three cases, of which the first one gave a clinical history of chronic lung tuberculosis. Autopsy showed tuberculosis in right lung, of both kidneys and in the right suprarenal gland. A putrid abscess was found in the right hemisphere containing the fusiform bacilli and spirochetes. The second case is one of appendicitis, with secondary abscesses in the right tibia, cerebro-spinal meningitis, abscesses in both kidneys, in left lung and the liver. The third case is similar to the second one. Kaspar and Kern[5] cite two histories, very much like the above, in one the appendix being the starting point, and in the other one, very probably the cardia of the stomach. The above cases show us that almost any portion of the body may be invaded by this organism.

To the above I wish to add my case-report: Male, aged 54, with a history of supra-orbital headache mostly over the right side, duration about three weeks; no more than usual discharge from the nose; no elevation in temperature. The headache seemed worse in the morning. Examination showed nothing external, no protrusion of eyeball or redness; pain could be elicited on pressure over internal orbital plate. Internally, left side negative. No discharge on right side, but the middle turbinate filled the upper nasal space. A diagnosis of ethmoid trouble was made with a probable frontal sinus involvement.

The operation, under cocain, consisted in an attempt to resect the front portion of the middle turbinate. This, however, was merely a shell filled with a cheesy material of a characteristic odor. Microscopic examination revealed the fusiform bacillus and the accompanying spirochete, and here and there other forms of bacteria; there was now no question as to the diagnosis.

The entire middle turbinate had to be removed, since a good deal of destruction had gone on in the ethmoid cells; both the anterior and posterior sinuses had to be taken out; the fronto-nasal duct was enlarged and the entire ethmoid cavity carefully curetted. This space was swabbed out with a weak iodin solution and lightly packed with xeroform gauze, and patient was given five grains of urotropin every four hours as a protection for any cerebral complication. Packing was removed the next day and the cavity repacked with a tampon of a 10 per cent solution of salvarsan in glycerin. This was left there one hour and repeated daily for four days. The headache rapidly disappeared and practically no pus was seen after the operation. In ten days' time the patient was sent home with instruction to cleanse the nose with a weak solution of iodin. Though it is a year since the operation, there has been no trouble or recurrence.

Twenty years ago, Plaut and Vincent, entirely independently discovered that this form of ulcerative angina is due to two different organisms, but in the last six years much more work has been done and it is now generally conceded that we do not have two distinctly different organisms, but that one is merely an evolutionary form of the other, always found together. This view seems to have been definitely proved by Tunnicliffe.

Lasagna[6] in his experiments came to the conclusion that the spirochete might be the primary factor, as he found the fusiform bacilli very scarce in the beginning. By inoculating necrotic tissue into guinea pigs he could produce much severer and more timely symptoms than by injecting the fusiform bacilli alone. Hence his conclusion.

In regard to treatment might be mentioned that Gerber[7] has given salvarsan intra-venously with good results (0.5 and 0.6 grams were used). Rumpel[8] reports seven cases with equally good results. On the local action of salvarsan, Achard[9], Gutmann[10], and Sourdel[12] have reported favorably. The salvarsan was suspended in glycerin. Zitz[13] has also reported good results, by first irrigating with a saline solution and a 10 per cent solution of salvarsan, suspended either in water, glycerin or oil.

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209 Overland Block.

Sludder Method of Tonsillectomy. A. M. CORWIN, *Ill. Med. Jour.*, Jan., 1913.

In this paper Corwin lauds Sluder's method of tonsillectomy and describes the various modifications and improvements made in the instrument and accessory technic. ED.

Malignant Disease of Tongue and Mouth. R. ABBE, *Med. Rec.*, March 15, 1913, p. 461.

From observations, during the last ten years, of 40 cancers of the tongue, 15 leucoplapias, 27 sarcomata of the jaw, 40 sarcomata of the pharynx and tonsil, and carcinomata and tumors in various other regions Abbe concludes that early radical operation is the only reliable procedure. Radium is effective in giant-cell sarcoma and in leucoplakia. ED.

A LARGE CYST OF THE EPIGLOTTIS.*

DR. H. MOULTON, FORT SMITH, ARKANSAS.

According to Mischkin[7] cysts of the epiglottis occur most often in men between the ages of 18 and 50 years. Dr. Crosby Greene[3] of Boston, however, refers to the literature of three cases in infants which caused death by suffocation. No age is exempt.

Lenox Brown,[6] Mischkin,[7] Forsyth,[3] and others regard cysts of the epiglottis as retention cysts. They are very rare. Noquet[5] says they are rarer than cysts of the vocal cords. Moure[2] reports 117 cases of cysts of the larynx of which fifty were of the epiglottis. Morell Mackenzie[5] publishes a drawing of a cyst of the anterior surface of the epiglottis. Several such cases are recorded. Most of the cysts reported are of small size, less than the size of a cherry, producing slight or no symptoms. Those as large as a hazel-nut are rare; larger ones very rare.

Hamilton[2] of Montreal records one as large as a hen's egg, said to be the largest on record; Beck,[1] one as large as a large hazel-nut; Greene,[2] one that was one inch in diameter.

Most of the cysts reported were attached to the anterior or posterior surfaces of the epiglottis, base of the epiglottis, or to the lateral folds leading from the base to the pharyngeal walls. I find only one case, that reported by Beale,[4] growing from the glosso-epiglottic fossa, the size of a cherry.

The treatment usually employed has been the snare, avulsing or cutting forceps, with or without electro-cautery. Beck[1] resorted successfully to lateral pharyngotomy after the other measures failed.

The case I wish to report bears the double distinction of being one of the very few large ones, and of arising from the very unusual location in the glosso-epiglottic fossa.

Mr. C., a lawyer, 37 years of age, of excellent general health and the father of healthy children consulted me on September 27, 1911. Two or three years before he had had a slight hoarseness which soon disappeared. For four or five weeks before consulting me, he had been troubled with a gradually increasing feeling of fullness in his throat, which was now beginning to interfere with swallowing and speaking. Laryngoscopic examination revealed a large, smooth, yellowish-red tumor between the epiglottis and tongue on the left side. The tumor displaced the epiglottis backward and to the right side and extended from the left lateral pharyngeal wall two-thirds of the way across to the other side. Its summit was somewhat higher than the crest of the epiglottis. In size it might be compared to an English walnut. It was firm to the touch and apparently without fluctuation.

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*Read before the American Academy of Ophthalmology and Oto-Laryngology. Chattanooga, Tennessee, October 29, 1913.

In discussing the diagnosis the probability of its being cystic was considered together with the possibility of its being some such solid growth as a scaroma or gumma. At my request the patient saw Dr. J. E. Logan of Kansas City on October 6, who punctured the tumor and established the diagnosis of cyst. In four weeks the cyst had refilled. I punctured it again releasing about an ounce of viscid yellowish mucus. The next time it recurred I attempted to cut away as much of the cyst wall as possible with a Krause cutting laryngeal forceps. Of course at the first cut the sac collapsed and very little more of the cyst wall could be secured. A curette was pushed into the cavity hoping to irritate the walls and produce adhesive inflammation. The shape and situation of the tumor precluded the use of a snare.

After several recurrences and attempts to cut away the cyst wall an operation was finally performed on April 22, 1912. After opening the cyst this time, as before,' the walls collapsed deep into the glosso-epiglottic fossa. The main attachment was a broad one, to the lower part of the anterior surface of the epiglottis, extending down to the bottom of the fossa. With the aid of the laryngeal mirror I was able to get a large electro-cautery point into the cyst cavity thoroughly cauterizing its walls in every direction. There was moderate reaction which soon subsided. To date after a lapse of eighteen months there has been no recurrence. The tissues in the bottom of the left glosso-epiglottic fossa remain very slightly thickened. Otherwise the parts are normal. Cocain was the anesthetic employed.

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206 Merchants Bank Building.

INTRA-NASAL OPERATIONS AND THEIR RELATION TO HEARING.*

DR. S. W. THURBER, NEW YORK CITY.

The subject of this paper was suggested to me as one on which a discussion could be very profitably entered into, both from the standpoint of a rhinologist and an otologist. I can produce nothing new or startling, but hope to bring out some points of common interest.

First, as to the physiological inter-relation of the nasal and otitic cavities. It is a fact, I think conceded by all, that the nose, accessory sinuses, pharynx, Eustachian tube, middle ear, larynx and so on further down are all ramifications of the same tract. Taking the nasal cavity as the beginning, normal conditions here from birth up give that individual the best protection against diseases of the pharynx and middle ear. Normal nasal conditions include three factors: (a) a balanced secretion (the right proportions between the serous and mucous elements to permit surface flow without irritation); (b) good ventilation as applied to the air currents to and fro; and (c) good drainage posteriorly into the pharynx. Anything which disturbs one or more of these factors will give rise to certain symptoms. If nature had not supplied us with a duplicate nasal passage, disturbances that are now tolerated would never have been allowed to run on to the extent now seen. This tolerance will become yet less and less as our patients are educated to the harmful effects of the *laisse faire* position. The less distressing intra-nasal conditions are now brought to the physician's notice where a few years ago they would have been tolerated as a matter of course and of little consequence.

This brings us, therefore, to the question of intra-nasal operations in the young as a matter of prophylaxis in saving the hearing. Here it is impossible to separate the naso-pharynx from the intra-nasal cavity proper, because of their very intimate association.

By reason of the proportionately large Eustachian cushions in the child, adenoids, when present in any obstructive degree, do more harm to the ears than any other condition; and even when not large enough to form an obstructive mass, their lateral tags and bands seriously interfere with the ventilation of the middle ear by restricting the action of the lips of the tube. To save the hearing in these cases the obstructing mass must be removed and especial care be taken to clean out the fossae of Rosenmueller. The question of the time in which to operate is important. Shall one remove adenoids during an attack of either acute catarrhal or acute suppurative otitis media? The otitis even of the so-called catarrhal type often follows a rhinitis or pharyngitis, and may be considered an infection. The large base left denuded after the removal of adenoids would theoretically offer many channels for a bacterial invasion; yet on the other hand, the continued presence of adenoids makes the resolution of the otitis more difficult and at times impossible. Accurate judgment in these cases is necessary, and it does not seem as if any hard and fixed rule can be formulated. In the chronically discharging ear, the case is different. One has waited for resolution in vain and operation is here clearly indicated. The same considerations apply to other naso-pharyngeal growths, but as their base is not apt to cover as large an area as that of an adenoid mass, their removal need not be delayed.

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*Read at the meeting of the New York Academy of Medicine, Section on Laryngology, April 23, 1913.

The common intra-nasal obstructive lesions in the child which interfere with proper ventilation and drainage of the middle ear, are hypertrophic rhinitis (that of the middle turbinate frequently associated with ethmoiditis) and septal deformities. A surprising number of children and young adults will present all grades of obstructive lesions of the nose without ever giving any symptoms referable to their ears, yet in the experience of later years one cannot escape the conviction that had these conditions been relieved when seen in the youth of these same individuals, the ears would have been saved insidious disease. In other words, operate in children to prevent mouth breathing. The kind of operation to perform on the septum of a growing child is important. It is a question whether an extensive submucous removal of the septal cartilage or part of the ethmoid plate is a wise procedure. Personally, I limit the amount of material removed to as small an area as is possible to obtain good function. After the removal of adenoids, there is often quite a grade of hypertrophic turbinate tissue to be taken care of, over the inferior bone especially, and this can best be reduced by lines of cauterization, for the bone itself will rarely be found to be too large to permit good nasal respiration. The removal of the hypertrophy of the posterior tip of the inferior turbinates is necessary when it is of sufficient size to interfere with the anterior lip of the Eustachian tube,

From the obstructive lesions in the nose and pharynx let us turn to the atrophic cases. The frequency of ethmoiditis in the young as associated with atrophic rhinitis would center operative procedures about the ethmoid cells. Of course if any of the other sinuses are involved these will also demand our attention. In any case, the harm of pus flowing over the nasal and pharyngeal mucous membrane, the irritation from crusts and putrefaction is well established. Infection of the middle ear often occurs, and atrophic changes follow in the tube and ear as they do in the nose.

The main difficulty in my mind in operations on the ethmoid cells is to effect a cure without at the same time making the nasal space too patent, filled with cicatricial tissue with its attending loss of secreting glands, and thus bringing about postoperative atrophic changes as bad, if not worse, than the original condition,—the absence of pus being the only difference. To remedy this, one might resort to the submucous injection of paraffin to build up, as it were, new turbinates; but this is hardly feasible in the middle turbinate region, especially in the young. Operation for prophylaxis in adult is indicated along the same lines as already mentioned, i. e., putting the nose in as near a physiological condition as possible as to ventilation, drainage, and balance of the elements of the secretion. A few things may be added in the line of obstructive lesions more common in adults than in children, such as polypi, septal traumatism, hematoma and abscess. dislocations, spurs and ridges, and in the atrophic varieties the involvement of all the sinuses now fully developed. Patients coming to us with any of these lesions will often complain of some loss of acute hearing; and if we are to prevent further extension of middle-ear disease, intra-nasal operations are indicated.

But what about the slowly advancing chronic catarrhal otitis, where the examination of the nose reveals no mal-secretion and there is good ventilation and drainage yet certain abnormalities exist, either unilateral or bilateral that would interfere with proper treatment of the aural condition. A common example is a low ridge interfering with the passage of the Eustachian catheter. Shall the catheter be passed through the opposite naris or shall the ridge be removed? Or, if it is possible to inflate the ears by Politzer's method, would the fact that one naris was moderately blocked have much influence on the ear on that side, when the pharynx is roomy and good ventilation is established through the less-occluded naris? I think all of us have seen patients with chronic catarrhal otitis in the ear on the side of the normal naris, as far as we are able to judge.

It is a vital question what benefit we are able to promise to patients who have let a slight amount of deafness go untreated by advising them to undergo intra-nasal operations. There is more hope of saving a slightly damaged middle ear than one in which adhesive changes have been long and firmly established, and it is therefore in these cases of early recognized deafness that most can be hoped for by intra-nasal operations done for the purpose of putting the nasal interior on a normal physiological basis. Treating the ear alone without attention to intra-nasal conditions is not doing our patients justice. In the advanced cases where there is *some* nasal abnormality yet not enough to interfere with function, I doubt if any operation in the nose will aid in retaining or restoring the hearing.

There is another side of this subject to consider. Does any class of intra-nasal operations tend to *produce* middle-ear complications and perhaps a resulting deafness? There is, first, the danger of infection, especially where it is necessary to pack the nose. Long retained packing is almost sure to result in otitis media, especially if the operation be accompanied by much bleeding. Most packing should be partially removed as early as possible, so as to establish some ventilation and drainage below or above it. Packing comes out easier and is not as apt to re-establish hemorrhage if left in forty-eight hours, but that is too long a time in many cases.

Second, extensive intra-nasal operations are harmful in that they make the nose *too* patent and producing a condition similar to atrophy. Happily the day has arrived when the destruction of more or less of the intra-nasal mucous membrane has ceased and the sub-mucous operations have taken the place of the older methods. The removal of the inferior turbinate body in part or in whole is not now done as it used to be, so that the harmful results, obtained by replacing cicatricial tissue for secreting mucous membrane as affecting first the nose and thereby the pharynx and middle ear in producing atrophic conditions, are not seen.

Finally, the whole question of the relation of intra-nasal operations to hearing—either its preservation or attempts at its restoration—hangs on the condition of the nose as to the balance of secretion, normal ventilation and normal drainage. If these functions can be retained or restored by operative measures in the nose, the rhinologist has done all he can to save the ears from pathological changes.

104 East Thirty-ninth Street.

Paralysis of the Recurrent Nerve Due to Circulatory Lesions.

J. W. GLEITSMANN. *Med. Rec.*, Feb. 22, 1913.

Our distinguished colleague considers this important topic in a very interesting paper, divided into five chapters: (1) Physiological remarks; (2) recurrent paralysis from heart lesions in general; (3) paralysis in connection with mitral stenosis; (4) aneurysm; (5) therapeutics.

He has searched the literature and offers histories of a number of cases to substantiate the above-mentioned causes. Rheumatism is mentioned as a possible factor in the production of recurrent paralysis, but the author warns us to be careful in attributing the lesion to this affection, as by a longer observation under modern therapeutic means we may be able to find a true pathologic lesion.

Surgery has been successful in a few cases in bringing back the function of the nerve. Bruenings reported good results from injections of paraffin into the vocal cord. Two applications were made. In the first treatment, three injections were given, in the anterior, middle and posterior portions of the cord, and after five or eight days the interstices were filled out. The voice was improved in one case, with an old bronchitis; great relief was experienced by being able to expectorate. No ill effects were observed in the treatment. LEDERMAN.

GRADENIGO'S SYNDROME.—ONE CASE-REPORT AND AN ANALYSIS OF THE PUBLISHED CASES.

DR. H. B. GRAHAM, SAN FRANCISCO.

Gradenigo, in 1904, described a paralysis of the external rectus muscle occurring in acute suppurative otitic cases which together with other symptoms has become known as Gradenigo's syndrome. I presented in 1911 before the San Francisco County Medical Society, a case exhibiting this syndrome, the history of which was as follows: Early in June pain in right temporal region followed by suppuration of the ear and on June 22, operation with primary closure. Following the operation the patient complained of pain in the top of the head which persisted for months after all other symptoms had cleared up. Patient left the hospital ten days after the operation and was re-admitted July 9, complaining of double vision. The wound was opened, the clots and serum were removed; no pus found. Following this for a number of days there was headache in right frontal quadrant, burning sensation in lids on the right, gurgling sound back of the right ear, sleeplessness, dreaming and diplopia.

The various examinations gave crossed diplopia, right abducens paresis, movement out very little beyond median line, objects to the left and those in front at not more than twelve inches seen singly, those anywhere to the right seen double. Iris and corneal reflex normal, no ptosis. Superficial skin reflexes normal, deep reflexes strong, no Babinski, no ankle klonus. Fluid from spinal puncture ca. 9 ccm., clear, light-straw color, albumen normal, no sugar, no cellular deposits after centrifuging. On October 30 the patient had entirely recovered. I judged at the time that the primary closure of the wound was responsible for the abducens paralysis producing a meningeal irritation in the middle fossa and am inclined, after reviewing the literature, to accept this explanation.

Chas. E. Perkins has collected ninety-five cases which he has analyzed and to those collected by him I am able to add thirteen more. In these 108 cases the causes of the abducens paralysis were ascertained in only thirty-six with any degree of certainty. Of these, the causes were sinus thrombosis in two, meningitis in six, labyrinth disease in four, abscess in posterior fossa in nine, in middle fossa in two, osteitis or disease of the petrous tip in thirteen.

But few autopsies were recorded in this series, most of them showing a purulent meningitis at the base of the brain, two recording a necrosis at the apex of the petrous portion of the temporal bone and one, Coulet's, a sarcoma. In Terry Smith's case there was a teacupful of serous fluid let out of the meninges at operation.

Reasoning from the pathology that we see in cases exhibiting similar symptoms in other parts of the body, third, fourth, eighth and ninth nerves, we might well be led to believe that it could be a variety of causes that could lead to this paralysis. If pressure, toxemia and an acute inflammation can all cause paralysis of the vocal cords, why can they not also be active causes of a paralysis of the sixth?

Baldenwick's cases were undoubtedly due to meningitis at the apex. Coulet's case was undoubtedly due to pressure of the sarcoma; Terry Smith's to pressure of the serous fluid in the meninges. The fact that so many recover would lead one to suspect that some very simple cause such as a transient hyperemia or a toxemia, as Tomassi suggests, alone was the fundamental basis for the syndrome. I personally consider that the most frequent cause is the local hyperemia and believe that in my case it was present when the pain in the vertex was complained of, that is, immediately after the operation.

Koellner throws some light on the general subject by giving an interesting analysis of 250 cases of sixth nerve paralysis occurring in the Berlin University Clinics of which 209 were paralysis of the sixth nerve alone. I append a table of causes as he found them:

Intoxications: Alcohol, 3; lead, 2; arsenic, 1, lumbar anesthesis (Stovain.), 1. Infections: Malaria, 1; influenza, 3; erysipelas (facial), 1. Diseases of kidney, 10. Diabetes, 1. Circulatory system, 5. Diseases of brain and spinal cord: Meningitis (chron. and tb.), 5; lues, cerebri, 13; lues, hereditaria, 2; tabes, 70; sclerosis multiplex, 7; polioencephalitis, 2; ophthalmoplegia chron. progressiva, 1; brain tumor, 13. Myasthenia gravis pseudoparalytica, 12. Hysteria, 3. Hemicrania, 4. Vasomotor dist., 4. Traumatic, 8. Otitic, 4. Paral. without known cause, 31. Congenital, 9.

That those paralyses accompanying otitic disturbances are not all due to the same cause he believes is shown very conclusively by his reference to the four cases of Passow included in his table. One was, in all probability, due to a local serous meningitis; the second, on account of both nerves being involved with a one-sided ear affection, was in all probability due to a lead toxemia, the man being a worker in lead. The next died of a suppurative meningitis; the fourth had a probable alcoholism as a contributing cause.

These various causes of this very interesting syndrome have been aptly grouped by Alt (According to Schwarzkopff. Die otogene Abducenslehm. *Zentralblatt fur Ohrenheilk.* Bd. 5. Heft 5.) as: 1. Reflex from the vestibulo-eye muscle nuclei. 2. Infectious neuritis. 3. An extension of an inflammatory process to the sinus cavernosus from the venous channels of the carotid canal. 4. Pressure paralysis through a serous arachnitis. 5. Deep disease of the temporal bone and a meningitis at the tip of the pyramid. To these may be added (6) a toxic neuritis.

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209 Post Street.

Acute Lesion of the Tympanic Membrane Due to the Use of the Telephone Receiver. E. FABRI, *Boll. delle Mal. dell'Orrecchio*, March, 1913, p. 49.

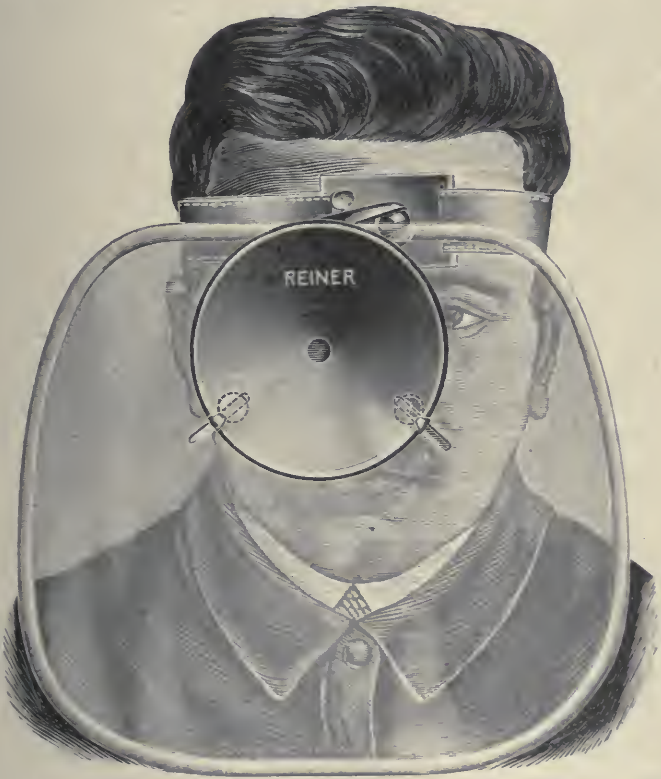
The author points out the peculiar injury to the tympanic membrane which results from the sudden change in air-pressure when the telephone receiver is held tight to the ear. Two cases of perforation in hitherto healthy membranes are recorded. As a preventative to such accidents the author recommends care in holding the receiver to the ears.
ED.

A FACE PROTECTOR.

DR. FRANKLIN E. CUTLER, CLEVELAND.

A number of years ago a New York professor called attention to the fact that in treating throats, if a glass was held in front of the doctor's face, the glass was covered with a fine spray from the patient's coughing.

For the treatment of throat infections I have devised this simple shield (see cut) which has practically no weight and can be adjusted to any ordinary head mirror in no time. The transparent shield has a hole through which the ball on the back of the mirror passes, and it is fastened below by clamps, which, after adjustment into position, are screwed fast. I have made another hole in the shield behind the "peek-hole" in order not to have the slightest obstruction to vision. This is not necessary, but as the composition-material of which the shield is made becomes scratched in time it necessarily interferes with perfect vision. By securing a plain lense to the back of the mirror as one of my friends has done complete protection is obtained. I have been using this shield for several years and at times it has been, to say the least, a great comfort.



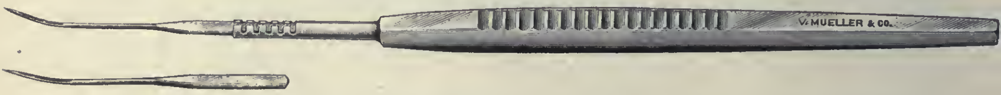
936 Rose Building.

A NEEDLE FOR INTRA-NASAL SUTURING.

DR. CHARLES NELSON SPRATT, MINNEAPOLIS.

Accurate approximation of the edges of a wound promotes rapid healing, and leaves a minimum scar. In the submucous resection, the writer, for a number of years, was content to hold the flap in place by packing, as the application of sutures was time-consuming and often difficult. There was, however, always some retraction of the edges of the wound, with scab formation, which delayed healing and in some cases gave rise to crust-formation.

For the past six or seven years, the needle and holder, shown in the illustration, has been used with entire satisfaction in suturing the incision of the submucous operation. A fine sewing machine needle is heated in a Bunsen burner until it is cherry red, and a sharp bend of about 20° is made just back of the eye. The bend is made so that the groove in the needle is on the convex side. Unless overheated, the steel retains sufficient temper to give the required stiffness. Any curve desired can be given the needle. The full right angle and 45° curve have not been found to be of as much service as the curve shown in the illustration.



Originally the handle consisted of a split canula from an old tonsil snare into which the butt of the needle was placed. Mr. Mueller has improved this by using a piece of steel spring tubing with cross cuts.

Fine black collodion silk is used for the sutures. The anterior edge of the incision is penetrated by the needle, and holding the free edge of the flap with fine forceps the needle is pushed until the eye is beyond the puncture. On withdrawing the needle slightly, the thread forms a small loop which is grasped with the forceps, while the needle is withdrawn. An incus hook is useful for catching the loop and as an aid in tying the knot.

If the muco-periosteum is accidentally perforated on the opposite side a properly placed suture will generally close this. Unless the flap is torn drainage must be secured by an incision in the flap. If this is made posteriorily no annoying crusts will form, as the parts are always moist. Packing the side of operation for twelve hours is advised, as the swelling is less, and hematoma formation is avoided.

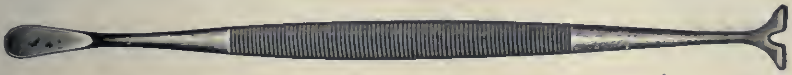
900 Nicolett Avenue.

SHARP TONSIL DISSECTOR WITH DOUBLE PILLAR RETRACTOR. MODIFIED JANSEN-MIDDLETON NASAL SEPTUM PUNCH.

DR. SAM GOLDSTEIN, NEW YORK CITY.

Tonsil-dissector: Distinctive points of difference between this instrument and the other tonsil enucleators in general use, have induced me to publish a brief description of its most important parts.

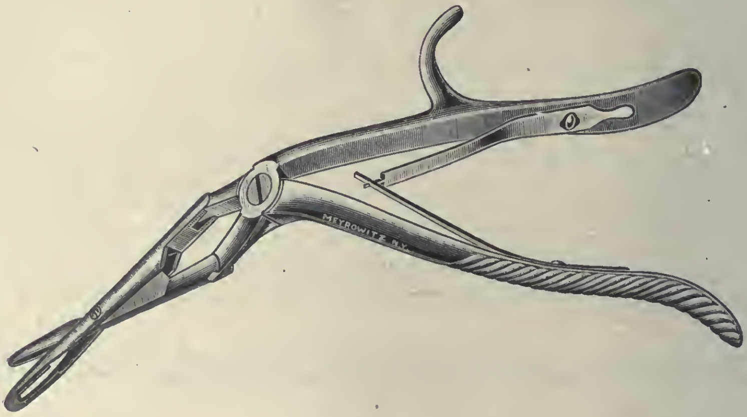
The handle, with deep corrugations, or ridges, is strongly fashioned, to afford the operator a firm grip. The spoon-end, or dissector, is long and fairly narrow, with smooth surfaces curving gradually, and terminating in a circumference or edge, sufficiently sharp to allow ease of complete dissection with a minimum of pressure, except in such cases where old adhesions require severance. The reason for having the border of the dissector spoon-end sharp is a rather obvious one, although adopted as a result of observation in the use of dull and milled-edge enucleators, which even in skillful and careful hands, necessitating using considerable force, and often were productive of much trauma, hemorrhage and frequently incomplete tonsil enucleation, requiring a good deal of punchwork for the removal of tonsil bits and shreds of tissue. At the other extremity of the instrument is the retractor, bifurcated by a deep groove; thus forming two retractors.



A pillar retractor of this construction is applicable to any form of anterior tonsillar pillars encountered in our work, whether using either segment or the retractor in its entirety. When either one of the retractors is applied to the supravelar margin, it will be found to fit admirably, permitting full retraction for a free inspection of that part of the tonsillar fossa so often the site of a detached portion of the diseased tonsil, which, if not removed, remains the nidus of subsequent infection.

Again, in operating upon tonsils which have become an ever present menace to the patient's health, from repeated inflammatory attacks, or as the site of previous abscess formation, where tabs of tissue are found adhering to the anterior pillars, even after the most careful enucleation, applying the full retractor to the anterior pillar forces these bits to emerge, nipple-like in appearance through the groove dividing the retractors, readily permits their removal with the punch forceps, and at the same time avoids any trauma and ever-present danger of pillar mutilation, especially when the operative field is not constantly kept free of blood.

Modified Jansen-Middleton septal punch: This simple addition to the Jansen-Middleton septal punch was devised for the purpose of holding the bite within its jaws, when employing this forceps, and thus obviating the necessity of introducing another instrument to remove punched-out fragments which have been forced through its fenestrated jaw and dropped between the (elevated) septal flaps, or fallen to either side of the ridge or vomer.



Considerable time was necessarily consumed in searching for and in extracting these bits, especially if the operative field was at all obscured by blood; but with the punch in its modified form, the operator sees the result of his bite held within the collar at each withdrawal of the instrument. This collar is a narrow, thin metal plate connected with the external surface of the fenestrated blade of the jaw, and does not, in any manner, add to its bulk, as its surface is smooth and sufficiently wide to firmly hold the detached part when bitten through by the punch.

The illustrations of these instruments clearly show the purpose of their construction, without a more detailed description.

1211 Madison Avenue.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular Meeting, May 28, 1913.

William W. Carter, Chairman.

Report of a Case of Acute Dyspnea in a Child 4 Months Old. Extubation. Recovery. Dr. C. Johnstone Imperatori.

P. S., 4 months old had always nursed well from birth and was generally considered by parents and neighbors, a healthy infant. Early in the morning of March 26, 1913, the mother noticed that the child was breathing rapidly and that it could not nurse. The night before the child appeared to be in his usual good health. At 5 a. m. March 26, dyspnea and slight cyanosis began. The patient was first seen at 1 p. m. same day.

Physical examination made at this time showed a well-nourished male child of 4 months. No signs of rickets. Pulse, 140; temperature, 104°; respiration, 60; skin pale, lips purple and mucous membranes dark blue. The breathing was high-pitched inspiratory type with a marked shortening of the expiratory element with the accessory muscles of respiration being brought into action. There were a few moist rales scattered through the chest and over the large bronchi anteriorly. Heart sounds were normal in character, but the beat was markedly accelerated. Throat and mouth—mucous membrane glazed and dry—otherwise negative. Digital examination of larynx showed both arytenoids soft and boggy. Epiglottis felt normal. Cough was slightly croupy in character. Intubation and injection of diphtheria antitoxin was advised but refused.

At 7:30 p. m. the same day the case was again seen. The general condition of the child was worse—marked prostration and relaxation. The child had not nursed since the night before, that is about twenty hours. Pulse, 160; temperature, 105°; respiration, 70. The skin was paler, fingers and toes blue, and lips and mucous membranes purple.

Intubation was again advised and the parents consenting, a one-year size tube was introduced into the larynx. The epiglottis now was considerably swollen by hooking it forward and getting the tube and introducer in a more perpendicular position—the swollen epiglottis seemed even to facilitate getting the tube in place. 1,500 units of diphtheria antitoxin were given at this time.

It might be of interest to note that immediately after placing the tube within the larynx the child became unconscious, corneal reflexes disappeared, pupils moderately dilated—but the breathing became slower and fuller, and the heart sounds stronger. The child was not further disturbed—for the blueness of the finger tips and toes could be seen to be disappearing, and the lips and mucous membranes of mouth appeared a brighter red.

Within 15 minutes after intubation the child awakened and successfully took the breast. The general improvement was immediate; within twelve hours the tube was coughed out and, there being no immediate necessity, it was not replaced. Within three hours after intubation the rales in the chest had disappeared. Cultures taken from the neighborhood of the larynx and from the tube were negative for Klebs-Loeffler. A second culture taken a few days later was also negative.

Twenty-four hours after coughing up the tube, the child had a severe fit of coughing and strangling, with considerable gagging. Nothing was vomited but considerable bloody froth and blood came up. The temperature gradually fell and within 3 days was 99°; respiration, 30, and pulse, 100.

Thirty-six hours after injecting the antitoxin the right wrist swelled and was very painful for a few days.

Conclusions: (1) Extubation was indicated because of the increasing dyspnea and cyanosis. (2) One massive dose of antitoxin produces better results than smaller repeated ones. (3) The fact that the child recovered, and its age, precluded against a foreign body producing the dyspnea and cyanosis. (4) No direct laryngoscopic examination was made—this should have been done. (5) The fact that the cultures were negative, mean that the swab, in taking the culture, was not in contact with the infecting material. (6) The edema of the epiglottis and arytenoids was due, directly to the tracheal obstruction. (7) The coughing and strangling that came on twenty-four hours after auto-extubation may have been due to an adductor spasm, but it would seem rather late for this to occur.

It is possible that this strangling and gagging was due to a dislodgment of diphtheritic membrane and the piece was swallowed. It would appear that this was the case—thus enabling us to account for the blood, and that this was a case of tracheal and bronchial diphtheria.

DISCUSSION.

Dr. Jackson said that he hardly felt competent to discuss the case, but it reminded him of one he had seen where there was an acute laryngeal stenosis in which the clinical diagnosis was diphtheria. Intubation was done and antitoxin administered. The father of the child was a prominent bacteriologist. The culture was negative throughout the attack, and yet it proved to be a case of true diphtheria, and the child is now under treatment for post-diphtheritic stenosis. Dr. Lynah would probably refer to this class of cases in his paper.

Lantern Demonstration of Laryngotomy and of Plastic Operation for the Formation of Adventitious Vocal Cords. Dr. Chevalier Jackson.

Dr. Jackson (by invitation) gave a lantern demonstration of his operation for the relief of laryngeal stenosis, particularly the reduction of hypertrophic supra- and infra-glottic post-diphtheritic hypertrophic stenoses, and of his method of plastic operation upon cicatricial bands for the formation of adventitious cords. He said be believed he was the first to demonstrate that, in all forms of laryngeal work involving destruction of the cords, the greatest factor in the production of a useful adventitious cord was full activity of the corresponding arytenoid, and for this reason he had always been exceedingly careful in planning an operation to avoid damage to the crico-arytenoid joint, and to as great an extent as possible to avoid injury to the arytenoid musculature. His lantern slides illustrated a large number of cases of many forms of laryngeal stenosis which he had relieved by the operation demonstrated. He continued to get good results from endoscopic galvano-puncture in tuberculous stenoses. He also got good results in papillomatus stenoses by repeated removals followed by the application of alcohol, but he believed that the treatment by fulguration, as advocated by Harmon Smith, and by radium, as advocated by Thomas J. Harris, were both methods full of promise. In regard to acute primary diphtheritic stenoses he had had very little experience, and therefore would listen with much interest to Dr. Lynah's paper. His experience has been confined chiefly to the post-diphtheritic condition.

DISCUSSION.

Dr. MacKenty expressed himself as loth to begin the discussion, since his experience was very small compared to Dr. Jackson's. In regard to papilloma of the larynx, he thought that the removal of the growth as fast as it appears gives the best chance for recovery. Rest by tracheotomy was the most important point of all. He had not seen better results from fulguration than has been accomplished by the removal of the growth as it occurs. In the work which he has seen in Europe they favor removal rather than fulguration. Some years ago when he was in general practice, autopsy was made on a child which died immediately after birth, and it was found that the death was caused by an atresia of the larynx. Dr. Jackson had spoken of such cases being possible, and that recalled this case to his mind, though he was not prepared to state its exact nature.

Five years ago he had a case of laryngeal obstruction due to trichinosis. It had developed to such an extent that the larynx was practically closed, and intubation was necessary.

Dr. MacKenty said that he had been much pleased with Dr. Jackson's remarks regarding the extensive removal of adhesions in post-diphtheritic conditions. Nothing short of the removal of the bands causing atresia will give anything like a good result. He also agreed with Dr Jackson that it is well to leave the arytenoid body for its aid to some extent in restoring some sort of vocal band. The case which Dr. Jackson had described where the cicatricial tissue took the place of the vocal bands was extremely interesting. It was probably due to the fact that the arytenoids were left behind and by their constant pull they formed a sort of vocal band. Low tracheotomy in order to close the laryngeal wound is a very important point. When abroad he had seen some difficulty in closing these wounds, and it has never occurred to him that it was due to the air pressure in breathing and coughing. That point will be of great advantage to all who are doing this work. Some years ago, he did a thyrotomy for cicatricial contraction. The larynx was opened and was found to have practically closed. Incision was made on both sides, cutting the larynx into three parts. It was kept open with packing until the fragments cicatrized in a new position and then allowed to close (a sort of laryngostomy) sufficient lumen was restored to improve patient's breathing.

The Section was certainly under obligations to Dr. Jackson for coming this evening and presenting out of his vast experience so much that was unfamiliar to most of them.

Dr. Harmon Smith said that a few years ago a case of laryngeal stenosis had been referred to him by a specialist who had previously done a tracheotomy for the relief of the stenosis. Examination of the larynx showed it to be completely webbed over between the two vocal cords, with only sufficient space left in the posterior commissure for the passage of a small probe. Through this opening he passed a probe down into the tracheal wound, to which a silk string was attached, and by means of a "to and fro" motion, one end extending through the tracheal wound and the other through the mouth, he was enabled to cut the stenosis. Following this he introduced a soft rubber catheter up through the tracheal wound into the larynx and kept it there for a space of about a week, moving it daily, so that no adhesions formed around it. At the end of this time the parents insisted on removing the child from the hospital, and it became necessary to take out the rubber catheter and leave the tracheotomy tube in place. He felt sure that the stenosis would again recur, but he had been recently informed by the surgeon who had first had the case in charge, that there had been no recurrence, and that he was able now to remove the tracheal tube, and the child had perfect respiration and a fairly good voice.

In one of his laryngeal papilloma cases the growth had projected into the lumen of the glottis from the anterior commissure, and owing to the tolerance of the boy's larynx it had been possible to make frequent removals by the indirect method. A fibrosis had occurred around the base of the papilloma until a third of the cords had been embodied in it, and from this the papilloma still projected outward in a finger-like form. Dr. Jonathan Wright, who had had this case under observation in the first instance, had frequently expressed the opinion that when certain physiological changes occurred, that not only the papilloma but the fibrosis would disappear. Dr. Smith had wished to present the case before the Section on Laryngology of the New York Academy of Medicine when the fibrosis was at its maximum. He had requested the boy to come back to the clinic several weeks later with the intention of having a picture made of it before presentation to the Academy. To his surprise, upon the return of the boy about a month later, not only the papilloma had disappeared, but likewise the fibrosis, and from that time forward there had been no recurrence of either. This was a very marked demonstration of the statement made several years previously by Dr. Wright.

Unquestionably there are two varieties of papilloma in the larynx. those with little infectivity and those with great. In this latter group may be classed principally the multiple fibromata in children, and upon the removal of these growths the adjacent mucosa will frequently give rise to new growths particularly if it has been injured.

Dr. Smith said that it was his experience that tracheotomy, thereby giving rest to the larynx, was the surest method of eradicating these growths, but if the growths were removed and the bases of the mucosa from which they sprung had the fulgurating spark applied, that their recurrence was lessened both as regards time and number. He had several cases in which fulguration had proved effective but in others it apparently had not served any purpose further than the temporary removal of the growths. The main trouble had been in preventing the fulgurating spark short circuiting upon the laryngeal spatula, and also to obtain a dry surface in the larynx upon which to apply the sparks. Mucous glands and other lymphoid elements were so predominant in the laryngeal mucosa that it tended to disseminate the spark before it could burn sufficiently deep to produce any result. He believed that in addition to the application of fulguration that the local use of alcohol and the internal administration of thuja occidentalis should be employed and that adverse criticism should not be directed towards fulguration as a means of obliterating these growths, because of the ineffectual attempts in some instances. A process which will so effectively remove skin warts and warts from the bladder must certainly be equally effective in the larynx, provided the spark can be concentrated upon a dry surface.

Dr. Gleitsmann said that the Section should be very grateful to Dr. Jackson for his very instructive demonstration and interesting remarks about the different conditions of stenosis observed and their treatment. Taking up the subject of laryngeal and tracheal stenosis, we can only admire Dr. Jackson who is cultivating and perfecting a third branch of our specialty. He first devoted himself to the treatment of laryngeal cancer and published valuable papers describing his method with card statistics of his results which by careful selection of cases for the proper operation were as good as or better than those by other. For valid reasons of his own he relinquished that field and began bronchosopic work, in which he soon acquired international reputation and made valuable improvements,—all of which is of so recent a date that they are familiar to all.

Chronic stenosis and occlusion of the larynx or trachea are generally very difficult to relieve permanently. They can be treated by the internal and external methods. The former was already adopted and ingenious instruments devised decades ago by the late Dr. Herrman Schrotter. In this country it was improved and largely employed by Dr. Rogers, and our member, Dr. Delavan, spoke very favorably of it several times in this Section.

Occlusion of the larynx, severe cicatricial stenosis, necrotic affection of the cartilages, etc., require laryngostomy, of which Dr. Jackson gave a complete literature in The Laryngoscope, 1909, and which became popularized, especially in France, by the indefatigable work and the numerous publications by Sargnon and his co-workers.

Without entering into the details of the operation and the indications when endo- or extra-laryngeal methods are preferable, he wished to make a remark about the history of laryngostomy which does not seem to be generally known. Although Gluck claims priority for the operation in the *Zeitschrift fer Laryngologie*, 1909, and says he performed it ten years ago without ever having been mentioned by Sargnon, the latter is considered by many its originator. But Sargnon himself, in his paper in the *Archives internationale de Laryngologie*, Vol. 24, No. 21, 1907, p. 338, gives Killian the credit of having performed the operation for the first time in the presence of French physicians.

Dr. Frank Miller said that he had, at present, under his care a condition which this demonstration will help him to relieve, namely a tumor of the arytenoid, by which the arytenoid was displaced into the larynx. This was six years ago, and was relieved by a Stroetter's tube sharpened at each end by filing, or roughened at the side for use of every part of the glottis, especially for the removal of nodes and restoration of voice, for fibrominous masses, papilloma in the anterior portion of the larynx or toward the arytenoid and also for paralysis of the cords of any kind. In this way, voice had been restored, not to its full power, pitch and quality, in some 60 cases, without any apparent injury to the larynx. As he was more interested in the complete restoration of phonetic values of the vocal anatomy, he had evolved a certain theory on the correlation of light and sound, which showed that strenuous work, such as laryngostomy and intubation did not fill the bill, as the tissues for phonetic restoration were often destroyed by it. The theory of correlation was that the arytenoids were prisms set upon their bases and that the vocal chords were also prisms attached to the arytenoids with the base toward the thyroid, these adjusted to each other at the arytenoid end. In this way, double prismatic forces were at work for production of the momentum of sound, detonating it into the cavities and the sinuses above, analagous to light phenomena.

Dr. Emil Mayer said that he was very much impressed with Dr. Jackson's statements regarding the arytenoids and the care that should be taken with them. Recently he himself had read a paper before the American Laryngological Association and had called attention to the function of the arytenoids. In a certain case where the arytenoid had been fixed by a swallowed pin, the patient could not perform the act of deglutition. We have been accustomed to looking upon the epiglottis alone as a safeguard against foreign bodies entering into the larynx. His own experience had been limited to post-typhoid perichondritis, injuries, scleroma, etc. He had fortunately been able to take care of these patients by the intra-laryngeal method, and he would probably adhere to that so long as he was successful, a plan which Dr. Jackson would surely approve.

Dr. W. Sohier Bryant said that he had listened with much interest to the paper and discussion. He said that the topic was a very broad one and that necessarily the discussion had to be more or less desultory, and he would make his remarks as short as the topics were long.

The subject comprises nearly the whole of otology as well as laryngology since it covers the etiology and treatment of all middle-ear diseases. If we are to do all we can to prevent middle-ear diseases and all we can to cure it after it has once begun, we will have to put the nose and naso-pharynx into perfect physological condition. The gross anatomical defects are not so important as are some of the minor pathological conditions. Although a deviated septum may close one of the nares, it is not necessarily of great importance to the hearing. The congestion of any part of the mucous membrane or any infection of the mucous membrane, or any change of the mucous membrane or erectible tissues which interfere with the circulation of air around the turbinates and in the middle and inferior fossae, has a very important bearing on the impairment of hearing.

Going more into detail, the contact of the middle and inferior turbinates especially of the lower turbinate with the outer wall of the nose is often a causative agent in middle-ear changes.

Considering the question of infections in detail, a limited infection in the region of the pharyngeal bursa can produce absorption enough to cause disastrous trophic changes in the middle-ear. Unfortunately these minor changes as a rule receive little attention compared to the care bestowed upon spurs and deflections which may or may not have a causative effect upon middle-ear deafness.

Dr. Bryant emphasized the importance of giving proper attention to these occult minor causes of middle-ear diseases in the prophylactic stages as well as in the most advanced condition.

Dr. Chevalier Jackson acknowledged the remarks of the Chairman in introducing him, and said that any merits that were attached to him lay in his ability to pick out a good man whose example to follow. The hour was getting late, but he would like to say a few words on the point brought up by Dr. MacKenty. Rest of the larynx following tracheotomy is certainly a factor in assuring recovery, though how much of a factor, it was impossible to say. The case of trichinosis reported by Dr. MacKenty was entirely unique, and he hoped that Dr. MacKenty would send him a detailed report to be kept with his other literature upon the subject.

The case of string cutting reported by Dr. Smith was also unique and brought to mind Abbe's work on the esophagus. The case got well as the result of treatment and it was remarkable, especially the endo-laryngeal method of putting the rubber tube through the mouth.

He expressed his interest in Dr. Miller's theory of tone-production, but did not feel competent to discuss the physiology of the voice or tone-production, as his own work had been chiefly along mechanical lines.

Dr. Gleitsmann had asked how to classify cases suitable for laryngostomy. Dr. Jackson said that he agreed with Dr. Mayer that in some instances the endo-laryngeal method will succeed and it should be tried first. In the worst of Dr. Jackson's cases, the endo-laryngeal method was first tried, and that failing, prolonged intubation was tried and it also failed. Then the John Rogers' and Schmiegelow intubation tubes with post-projecting through the fistula were tried and proved unsuccessful. Then, as a last resort, laryngostomy was tried and the condition was cured. Many of Dr. Jackson's cases had, however, been cured by each of the methods enumerated. Therefore he felt like urging the following plan: First try the endo-laryngeal operation, then prolonged intubation, then the method which Dr. Mayer recommends; but that failing, as a last resort we can get all of these cases cured with laryngostomy provided that too much of the thyroid and cricoid cartilages have not been lost by ulcerations of the mixed infections getting in and setting up perichondritis and necrosis. It is possible that some of the cases may fail even under laryngostomy.

Dr. Jackson said that most of the credit for success in these cases was due not to his operative work but to Dr. Patterson's assistance and attention to the cases month in and month out until they were well. He had never seen anyone else with the patience to work untiringly with them until cured.

Laryngeal, Tracheal and Bronchial, Diphtheritic Stenosis, With the Pathology and Treatment of Chronic Stenosis of the Larynx Following Diphtheria. DR HENRY L. LYNAH.

DISCUSSION.

DR. EMIL MAYER said that most of the members could recall their experiences with the intubation tube in the days before there was an antitoxin. As he had not had occasion to intubate for diphtheria for twenty years, he did not feel himself in position to discuss the earlier part of Dr. Lynah's paper. He was, however, much interested in Dr. Lynah's remarks about the various chronic conditions we may be called upon to treat, and wished to emphasize the value of the recent addition to our armamentarium which makes this work so much easier for both the surgeon and the patient,—namely Killian's suspension laryngoscope. With this treatment, it is easy to so dilate a case of chronic stenosis of the larynx as to intubate very early. There is no other method which can be used with the same degree of safety. A year ago a little boy was admitted to the Mt. Sinai Hospital with a history of diphtheria and tracheotomy five and a half years before. The question was what was to be done for the stenosis. An attempt had been made to do a laryngostomy, but it had been a failure. The child then had a chronic stenosis as the result of the diphtheritic process plus the chronic stenosis following the surgical intervention. Dilatation had been practiced from below upward with various-sized probes. The child was placed under general anesthesia, and with suspension laryngoscopy it was possible to see just where the apparatus went in and was used. The uterine dilator was employed, followed by a rubber tube, its size increased until within a month's time an intubation tube was inserted, which the child is now wearing.

Dr. Mayer then asked how long Dr. Lynah would leave the tube in position. Is it wise to let a child go home with its tube, or should it be kept under observation for fear of evil results. He said that he had very much enjoyed Dr. Lynah's paper and the exhibition which he had presented.

DR. SMITH said that at the last meeting of the section he had reported a case of a safety-pin embedded in the larynx of a child having remained *in situ* for thirty-seven days, during which time the child had received 3,000 units of antitoxin, several doses of ipecac and had had an intubation tube remain in the larynx forty-eight hours when it was coughed up. The diagnosis of the case had been that of diphtheria and treatment was directed towards this end, but as the hoarseness had remained the child had been sent to him for the removal of what had appeared to be papilloma of the larynx, by indirect examination.

Since hearing Dr. Lynah's paper Dr. Smith felt that the gentlemen having this child under consideration were not far wrong in their conclusions, since there was evidence of obstruction to breathing and no history of having inspired a foreign body, and that in view of the fact that laryngeal diphtheria is frequently present with its obstructive elements, though no evidence may be seen of it in the pharynx or nose, and even though a culture proves negative, the administration of antitoxin is certainly a thoroughly justifiable procedure. The amount of antitoxin Dr. Lynah advocated for a primary injection seemed most appalling to those unacquainted with such extreme measures. He understood Dr. Lynah got his best results from the injection of 30,000 units, while the majority of physicians coming in contact with fewer cases frequently feel that sufficient has been done when 5,000 units have been injected.

With regard to recurrent laryngeal stenosis following diphtheria he believed that while Dr. Lynah was unable to find any pathological changes in the nerve that the functionating properties of the recurrent laryngeal must surely have been affected. He had recently seen a lady with paralysis of the larynx who had had diphtheria in childhood. She had had no antitoxin and no intubation but one side of the larynx was completely paralyzed and therefore he believed that a sequence to diphtheria was frequently an involvement of the recurrent laryngeal nerve, which if it could be examined in some of the later stages of paralysis, some years subsequent to diphtheria, would show unquestionably histological and pathological changes.

Dr. Jackson said that he was overwhelmed with the views of the pathological conditions presented by Dr. Lynah, and had never before seen such a series of specimens. He was especially interested in Dr. Lynah's demonstration of the fact that traumatism is sometimes done by the intubation tube, a new accident. Since seeing this demonstration Dr. Jackson was more than ever convinced that it was the mixed infection connected with the diphtheritic process as well as the necrosis which caused the damage to the larynx. Dr. Lynah had shown that traumatism can be done by intubation. If a false passage is possible, minor traumatism is, of course, possible and that offers an opportunity for the implantation of an acute infectious process. He had always thought that was not due to the intubation or tracheotomy but to the process itself. The features presented by Dr. Lynah were worth coming from Pittsburgh to hear and see.

Dr. Lynah said that he had very little to add to what had been said in the discussion except in regard to the question of antitoxin raised by Dr. Smith. If you use antitoxin in the first hour of the disease, a very small dose is all that is necessary. This holds good especially in animal experimentation, but in the human beings we have quite a different proposition, for we seldom see these patients earlier than during the first twenty-four or forty hours of the disease. In 1906, I endeavored to isolate free toxin circulating in the blood of cases of the severe type which had received no antitoxin before admission and to figure out proportionately by the blood and body weight of the patient the exact amount of antitoxin indicated in a given case. No free toxin was found in the circulating blood nor was there any effect on any of the guinea pigs tested. This proved conclusively that the firm union of the toxin with the cellular constituents of the body prevented its circulating whether it be large or small in amount. This started the administration of the very large or doses of antitoxin and he got much better results with the 30,000 unit doses than with several repeated doses of 3,000, 5,000 or 7,000 units. Furthermore, one dose only gives one reaction, and does not bother the patient as much as the frequently repeated small doses and is much less liable to produce anaphylactic shock.

Post-diphtheritic paralyses of the recurrent laryngeals Dr. Lynah thought were extremely rare. He had watched cases of neuritis with paralysis of the levators of the palate, in whom the voice was of a decided nasal twang, but the vocal cords would show no sign of any involvement or fixation.

He had also seen cases with apparent paralysis, in the laryngeal types of diphtheria, but when the larynx was examined the supposed paralyses were found to be due to infiltrations.

He thought the late paralyses referred to by Dr. Smith which were unilateral were in all probability due to ankylosis of the arytenoid cartilage. He could not say why these paralyses did not occur, but it was exceedingly rare to have involvement of the voice unless the patient had had laryngeal involvement or had been intubated.

Regular Meeting, October 22, 1913.

Epithelioma of Larnyx. Dr. T. R. Chambers.

On September 29, a man, aged, 66, entered my office and said he had been in attendance once a week for two months at a clinic in New York, and that Dr. S. had ordered medicine and a gargle (?) which he had faithfully used and that the doctor said his throat at each visit was about the same.

On examination, I found a smooth, globular tumor of the larynx encircling the left half of the epiglottis. I was deceived by finger-touch which seemed to confirm my diagnosis of abscess. He assured me its history was not a minute longer than two months. Externally, there seemed to be a thickening opposite the tumor. In this I was also deceived. At least at autopsy no tumor was found here external to the larynx. Having made up my mind it was abscess, I decided to let out the pus, and dreading a possible sudden death if the incision should be made in the larynx-side I pushed a knife into the mass just external to the epiglottis. Firm resistance was met and only blood followed the withdrawal of the knife. The tumor was evidently malignant, probably epithelioma.

He returned to his business and came the next day when arrangements were made with Dr. Yankauer in the hope that a hemi-laryngectomy might be done. It was almost unbelievable that with a larynx distorted as this was his speech should be only a little thick and husky and audible. The tumor left but a very narrow crescent of space for breathing and voice. The space between the hyoid and the tip of the superior cornua of the larynx on one side was but 5 cm. while the opposite side had tripple that distance. He left my office to return to his work but while at table in a restaurant suddenly died. Dr. G. W. King, County physician, kindly obtained the larynx and it is presented as a unique specimen. The tumor extends to the second ring of the trachea and invades the esophagus. An operation could only have had a fatal issue, probably on the operating table. Dr. G. E. McLaughlin's report is "Fibrous tissue stroma which encloses numerous alveoli made up of squamous epithelial cells with large round nuclei forming in places pearls. There is also a moderate amount of small round cell infiltration."

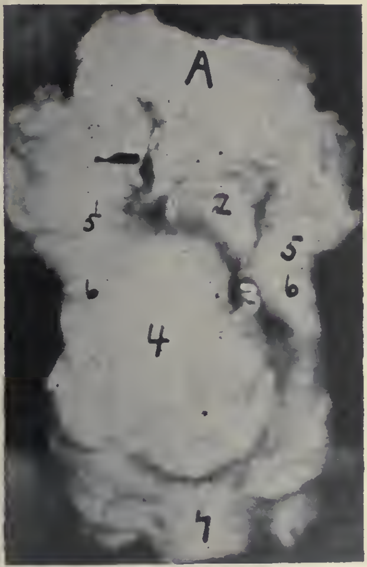


Figure 1. (Enlarged 2¼ times.) A. Base of tongue. 1. Cut for microscopic specimen. 2. Epiglottis. 3. Crescent breathing space. 4. Tumor. 5. Hyoid bone. 6. Supra-cornua thyroid. 7. Escphagus.

The case presents four remarkable features: (1) That a tumor in this region could attain such immense size 6.5 cm., 3.5 cm., 2 cm. (2) Rapidity of its growth, there being only two months' symptoms. (3) The wonderful tolerance shown. He was at his work, as clerk, daily. The voice was due to the fact that there was no involvement of the cords. Breathing was limited to a very narrow crescent of space. No dysphagia was complained of, although the esophagus was involved. (4) Absence of pain.

DISCUSSION.

Dr. Friesner recalled a case which occurred in the practice of Dr. Sharp and which was practically identical with this one. He drew a diagram on the board showing the position of the tumor in the larynx. The laryngoscopic picture of Dr. Chambers' case must have been precisely like that which Dr. Friesner mentioned.

Case of Status Lymphaticus With Skiagraph. DR. JOHN E. MACKENTY.

The interesting part of this case is before you. On October 14, the patient came to my clinic with a cleft palate. The child was about 1½ years old, the only child of a mother of over 40 years, and was apparently strong and healthy, light complexioned, with rosy cheeks, but had very little hair. The next morning at 8 o'clock it was etherized and I did the operation; time of operation three-quarters of an hour. The child was in good condition until about 2 p. m., when it began to cry, and at 3 p. m. it was noticed that the child was pale and breathing fast, and in fifteen minutes it was dead. The only thing I could think of as the cause of death was status lymphaticus. We took the body of the child into the x-ray room and had this picture taken. As you see, it shows an enormous thymus. I believe that in all cases where there is physical deformity, such as cleft palate, it would be well to have the child x-rayed for enlarged thymus. It may be that such cases are more likely to have ductless gland affections than normal children. The stereoscope shows the roundness and extent of the growth to be very well. It was very large, coming down to the diaphragm.

DISCUSSION.

DR. LAW said that the skiagraph presented an unusually clear outline of the thymus for the reason that the plate was made a few minutes after death; consequently the tissues were still soft and there was absolutely no movement to the gland or surrounding structures. The entire outline of the thymus could be followed, running from the clavicle downward on both sides of the sternum, and forming a cap over the heart. The apex of the heart was displaced downward and to the left. The plates being stereoscopic afforded an excellent view of the condition.

DR. JOACHIM told of a case which had a sad personal element in it as it concerned the child of a confrere, which died of thymus at the age of 3 years. The child was never sick for a moment but just dropped over dead. A post-mortem was made and it proved to be a thymus case. These conditions are probably not so rare as we may think, and we should be more on the lookout for them.

Perforation of the Nose Due to Erysipelas Following Traumatism. DR. J. H. GUNTZER.

DISCUSSION.

DR. MACKENTY: The result of this case is good, and Dr. Guntzer is to be congratulated. The flap taken from the brow left a large denuded area which has closed over with practically no deformity.

DR. CARTER said that he had seen the case before operation and that it was one of the most hideously deformed faces he had ever seen. There was a very large opening back into the nose, and it certainly required a great deal of skill to close it up. He had also seen the patient since the operation, and the photograph did not do full justice to the excellent result obtained.

DR. HURD told of a case he had treated a number of years before in which the patient had a crowbar blown through the side of his nose, leaving a big hole over an inch in diameter. A flap was taken from the forehead and the edges of the opening were brought together; the result was an excellent scar which could scarcely be seen. The flaps were severed in ten days, the wound sewed up in the forehead, and the pedicle cut off. The man made a good recovery, in spite of the fact that at the time of the operation he was syphilitic with necrotic bone in the nasal cavity and had been on mercury treatment for six months. He had primary union and a good healing.

Cases of Nasal Deformity Corrected by Transplantation of Bone. Dr. W. W. Carter.

The object in presenting these cases was not to show the number that had been corrected but rather to call attention to the results of the bone transplantation, and particularly to the condition of the bone in the nose at the present time, so that the members might have an opportunity to judge for themselves what occurs to bone when it has been transplanted in such cases. It was unnecessary to call attention to the operation, for he had shown it before, but in order to refresh their memories so that the men might fully understand the conditions at the present time he drew a diagram on the board illustrating the operation. For the transplantation, a piece of the ninth rib was used, and was shaped to fit the case. There was not in this case a sufficient amount of the bony framework left to support the noses, so they were not suitable for the bridge-splint operation. A curvilinear incision was made from the inner extremity of one eye-brow to the other, down to the periosteum but not through it. This flap was then raised with a tenaculum, and a transverse incision was made through the periosteum, which was then elevated three-eighths of an inch. A sharp dissection was then made down over the bridge of the nose, and the skin and subcutaneous tissue elevated to a variable extent, depending upon the deformity. Sometimes the tissue even over the cheek has to be elevated. The lower end of the bone graft is passed down nearly to the tip of the nose and the upper end is anchored under the periosteum over the frontal bone. Only the outer half of this rib is used and the cancellous tissue is scraped away with a curette. The incision is closed with horse hair or very fine silk. If everything goes well the wound is completely healed in ten days.

Dr. Carter said that he had had radiographs made from three years ago to the present time. In these cases the bone was transplanted into the soft tissue, and therefore, they are of considerable value, for most of the bone transplantation hitherto had been into the long bones. The transplantation of the bone into the soft tissues is a very different proposition from transplanting it into its own environment as in filling in defects in long bones. He had intended to show six cases thus treated, but only five of them had appeared. Plates were passed around, so that the members could see more closely what was occuring in the bone.

Case 1: This was a case in which bone not covered by periosteum was transplanted and a radiograph taken two months after the operation. It showed no absorption of the bone. The case was especially interesting in that the deformity followed a submucous operation. The patient had a slight injury to his nose, but the deformity would hardly have followed had it not been for the weakening effect of the submucous operation. He had a very pronounced depressed deformity. Another radiograph was taken eighteen months after the transplantation. In this where the bone joins the frontal bone there is a growth of bone extending down on the graft; growth begins again where the bone comes in contact with the nasal bones. There has been a considerable growth of bone below the contact with the nasal bone, so that the lower end is much larger than the upper end. This case demonstrates clearly the result of transplanting bone without periosteum.

Case 2: A radiogram of this case was shown. The man was injured three years ago, and operated two and a half years ago—bone-transplantation without periosteum. The first plate was taken twenty-one months after operation; the second, two years and four months after the operation. The bone was not absorbed but has been growing. In this case the piece of bone slipped out of its position, so that it only rests lightly on the nasal bones, but the graft seems to be larger at that point. The result is a very well-shaped nose. The bone-graft can be moved about. Here we have a periosteum-free bone-transplantation, practical free in the soft tissues, where it has been for over two years. It not only has not absorbed but it is distinctly larger than it was seven months ago. There is a little line of rarefaction running down the center of the transplant, giving one the impression that there is some absorption going on in the center of the original transplant. In this case the bone without periosteum was acting in an osteo-inductive capacity.

Case 3: This was one of the most interesting and instructive cases which the doctor has had. The patient had no bridge whatever, it being a congenial deformity. The bone was transplanted with the periosteum twenty months ago and the results could be compared with the cases in which there was no periosteum. The first plate was made fifteen months after operation; this shows firm union to frontal bone and considerable growth of the graft. The second plate, taken twenty months after the operation, shows much greater growth of the bone and a slight trace of rarefaction in the center of the graft, which was also noticed in the first plate.

Case 4: This patient had an accident about a month and a half ago. His nose was broken and a very peculiar deformity resulted. There was a dropping down of the cartilaginous portion of the dorsum, and the septum was bare and sticking out of the wound for three-eighths of an inch. In this case, instead of making a semilunar incision, that portion of the septum which protruded was resected and the bone was introduced through this longitudinal incision. This case was operated upon only eighteen days ago and the picture shows how the case is progressing. There was no reaction whatever, and it is perfectly well, as can be seen, though the bone is not yet in bony union with the frontal bone or nasal bones. The man has a good nose, and he had a wretched one when he first appeared at Gouverneur Hospital.

This is a case in which there was some infection of the bone at the time of operation. Nine months later every bit of the bone was absorbed. There was considerable pus for a time but it was controlled. This was one of those pier operations, that is in addition to putting in a dorsal piece of bone two piers were put in to support it. The pier shows very distinctly in the picture. In the next radiograph there is no bone left; it has all been absorbed.

These cases are presented purely for the purpose of demonstrating what occurs to the bone when transplanted into the nose. It is the first instance when the bone was used without periosteum and anchored over the naso-frontal process in contact with the nasal bones; the bone has not been absorbed, but is evidently growing especially from the points where it comes in contact with living bone and periosteum. In every one of these transplants there is an area of rarefaction, as if the original transplant were being absorbed. In the case where the bone was transferred with the periosteum, the bone is heavier and stronger, and evidently is growing rapidly larger.

Dr. Carter said that he could not accept the views of McEwen, for he felt that his cases which were operated before McEwen's book was written show that the bone has an osteo-inductive, osteo-conductive and osteo-genetic function, and that osteo-genesis is quickly assisted by the periosteum, and that if the periosteum is included with the graft it is more apt to be successful and will grow better.

DISCUSSION.

Dr. Gleason said that he had never done any work of this kind, but had made some injections of paraffin with very satisfactory results. He said that he was greatly impressed with the results obtained by Dr. Carter, and had remarked to one of the gentlemen present that he would like to have as straight a nose as these patients. Dr. Carter had demonstrated this work the evening before at the Philadelphia Laryngological Society and all the members were greatly impressed with the results of his method of procedure.

Dr. Goddard confirmed what Dr. Gleason had said, and expressed the hope that some of this work would be done in Philadelphia.

Dr. Hays said that he thought that all the members were pleased to have this demonstration of Dr. Carter's work shown them after a lapse of two or three years. There could not be a better demonstration of what he has done in these cases. He remembered that at that time there was a good deal of skepticism, which was further felt when Dr. Murphy, of Chicago, stated at the last meeting of the Congress of Surgeons of America, that these transplants would never stay in. Dr. Hays said that he had treated three cases by this method, the results in the first one being excellent, but the other two not so good. The reason for the failure as far as the cosmetic result is concerned can best be explained by means of diagrams. If the deformity is congenital or due, as in one of my cases, to pressure by forceps during birth, the line of the forehead and the chin extend out beyond the line of the nose; if so the nose is sunken in the center of the face. In such a case it is impossible to get a rib which will bring out the line of the nose without causing considerable stretching of the skin, or else causing a further curvature of the rib because of the tension on the skin. Sometimes the rib will have a curve from before backwards and upward towards the spine, besides having a convexity outward. In such a case if a large portion of the rib is needed it will be impossible to get a piece which will not have a tendency to cause the nose to be tilted to one side. This happened in his second case.

The demonstration of x-ray plates by Dr. Carter gives us an indication of the position that the rib assumes in its new place, and makes us have more confidence in the results of the transplants.

Dr. Carter, in closing the discussion, said that the object in anchoring the bone under the periosteum over the naso-frontal process was not to secure osteo-genesis, for the so-called periosteum over the bones of the skull is not an osteo-genetic membrane. Any osteo-genesis obtained is from the frontal bone or the periosteum on the transplant itself, not from the periosteum over the frontal bone. He had examined a number of skulls and through the courtesy of Dr. Gleason had studied some of those in the College of Physicians in Philadelphia, among them some which had been trepaned for many years, the patients living for a long while afterward—and there was no growth of bone over the opening in the skull. In these congenitally deformed cases, as in the negro boy just shown, the operation should not be done all at once as the skin would be stretched too tightly. This boy had been told that there would be another operation later, as it was necessary first to have a firm bone basis on which to build.

As for having a curved piece of bone, it needs to be curved in an antero-posterior direction. You do not want to transplant it on the edge. It can be cut straight, but have a curve in the antero-posterior direction, and the slight curve forward is an advantage as in the normal nose.

The cases presented are of considerable value for they are of long standing and they demonstrate some of the results of bone-transplantation; they are presented in order to show what actually happens. It is a case of bringing the goods and showing them. If a bone is not osteo-genetic, it is at least osteo-inductive.

The Indications for the Gleason Operation for the Correction of Deviations of the Nasal Septum. DR. E. B. GLEASON.

Published in full in this issue of The Laryngoscope, page 1129.

DISCUSSION.

DR. GODDARD said that he had not expected to be called upon to open the discussion, for he had wanted to hear the men of the Section speak of their experiences with the Gleason operation. It had been his good fortune to assist Dr. Gleason in a number of these operations, several on children, and in each instance the result has been very good. In the younger children it would seem to be the operation of choice, for it is quickly done and the results are very satisfactory. Of course, as Dr. Gleason had brought out, in deviation high up the submucous seems to be the operation of choice. Only the other day a youngster had come in with a marked deviation, and it required a great deal of strength to break up and remove the resiliency, but the result was good. The operation is so quickly done and the results are so satisfactory that the men in Philadelphia use it a great deal in preference to the submucous operation, particularly in the younger cases.

DR. JOACHIM said that in addition to the indications which Dr. Gleason had given for the operation there was one in which he himself preferred the Gleason operation to any other, viz., in cases where the inferior turbinate had been removed, creating an enormous cavity on the other side, whence the obstruction had been removed. In these cases his idea was to save as much material and tissue as possible and not to waste any more than had already been wasted, and for that reason he preferred the Gleason operation. It gives an absolutely good result, it restores the equilibrium, and the result is far better than any other operation could give under such conditions.

Dr. Hurd said that he hardly felt qualified to discuss the paper as he had long considered the submucous operation to be the operation of choice. Dr. Joachim had pointed out the advantages of the Gleason operation in unilaterial atrophic cases wherein the desire is to fill in the atrophic nares. The Gleason or the Asch operation was indicated and a submucous resection contra-indicated. I try to balance up the nose in that way. It is a very good operation. The Gleason operation is certainly simpler than the submucous, but unfortunately the indications for its employment are very limited; there has to be a small area of deviation to encompass it. (Dr. Hurd here drew a diagram and described several conditions in which it would be ineffective.)

The younger men in New York are all doing the submucous operation, hundreds of them every year, and have very good results. It can easily be done after a little experience and can be performed in a reasonable length of time—ten or fifteen minutes. Dr. Hurd said that he had done the operation on a series of twelve children, the youngest being six years old and had observed these children every six months since, some of them for seven or eight years, and there was no injurious effects on the nose. When the nose fell, it was usually the result of poor technic. Dr. Gleason's operation would certainly avert these cases of depressed nose.

Then the curved-in deviation will still remain, although you put the deviated portion into the other side; it is not obliterated, and there is always a cupping in. The point is that if you did not break up the resiliency absolutely the deflection will return. It never failed that they must smash up, no matter whether you did the Gleason operation or any other. The submucous seems to be the easier way, with less resection than the old-fashioned crushing operation.

Dr. Beeman Douglas said that he, too, belonged to the good old period of septum work, those days when all fought over the various operations which each had devised. He, himself, had devised a septum operation which, like Dr. Gleason's had considerable vogue for some time. From this it could be seen that what he was about to say had no sting in it to the guest of the evening, but that he simply expressed his frank conviction that any attempt to revive any interest in any sepum operation which was practiced before the submucous resection had been generally accepted would be about as effective as the attempt to awaken an interest in the re-introduction of stage coaches in these days of automobiles and aeroplanes.

Dr. Delavan called attention to the methods of the late Dr. Asch, which were the originals upon which the subsequent so-called "modifications" had been based, and which possessed so many valuable features. It seemed to him that Dr. MacKenty had summed up the matter admirably and that the points which he made might be subscribed to without much question. In his own opinion, operations for the relief of deformed septa might be divided into two classes, those in which for existing mechanical reasons the submucous operation was indicated, and those in which some other operation was preferable, in which the bony and cartilaginous framework of the nose was as far as possible preserved. The same principles of conservatism which applied in certain other surgical situations should be observed here. A properly balanced "setting up" operation would often succeed in relieving the nasal obstruction and in correcting deformity without permanently weakening the nasal structure, as in extensive resection, and in suitable cases was therefore to be preferred. The simile of likening the two forms of operation with the aeroplane and the antiquated stage coach was more apt, possibly, than the speaker had intended. We need to know more about resection and the aeroplane before we can speak with positive certainty of the final value of either. The method by replacement is the better for children in whom the septum is not yet fully developed. Without question the submucous operation, valuable as we all know it to be, has been largely overdone. The Section was indebted to Dr. Gleason for again directing attention to that fact.

Dr. John E. MacKenty expressed his pleasure in hearing Dr. Gleason's paper. He had known of the Doctor's work for many years and had performed his operation a few times. In the present tendency to do the submucous operation on every septal deformity we seem to have overlooked a simple method more applicable in some cases. In atrophic cases it is indicated over and above the submucous operation. One remark which Dr. Gleason made seems very important, that is the over-enlargement of the space by the submucous. In some cases the patient comes back with an enormous space and has a dry nose. We have neglected that problem in our work and have not always kept in mind that too large a nasal space is worse than one too small. In trophic cases, as Dr. Gleason has indicated, and in children, anything that will remove the deformity without injuring the septum is the best. We often see children with extreme anterior deformities. That type is extremely hard to relieve by any method and a complete submucous is contra-indicated. In such some plastic method should be adopted.

He thanked Dr. Gleason for the suggestion made in the paper, which may result in giving an impetus to do the Gleason operation instead of the submucous one in suitable cases.

Dr. Chambers said that he had seen Dr. Gleason do two of these operations in his office in Philadelphia, each of them occupying less than five minutes. Dr. Hurd says ten or fifteen minutes is a *long time* to take for the submucous operation. I should like to see him do his rapid work.

Dr. Wilson said that he also would like to testify to the admirable work done by Dr. Gleason. There seems to be still a place for this operation, and he wished to express his thanks to Dr. Gleason for coming over from Philadelphia and refreshing the memory in regard to it.

Dr. Abraham said that when he first began this work the Asch operation was still in vogue. He had had the pleasure of working with Dr. Asch and naturally favored that operation, but a little later he used the Gleason method and was very favorably impressed with it, employing it on a number of cases. Then came the submucous operation which he adopted and has been practicing ever since. The Gleason operation is no doubt better adapted to some conditions, and the discussion of the evening probably will revive its use in appropriate cases.

Dr. T. W. Corwin said that after having done the Asch operation for a while he had adopted the Gleason method and had been very well pleased with the results, and thought at that time that no better operation had been devised. There was very little discomfort to the patient and very good results. Since the submucous operation had come he had been following that procedure and had not used the Gleason operation much, though he recalled some cases in which no better results could have been secured. He was inclined, however, to think that in the majority of the cases which show deflection, the nasal fossa as a whole is undeveloped, and the septum presents curves and thickenings as the result of developing in too narrow quarters. It is too large for an undergrown nasal fossa, and it causes obstruction to respiration. Any operation that tends to reduce its bulk as well as its deviations will aid respiration.

Dr. Strouse said that any operation which corrects one deformity and produces another is not surgically correct. The submucous operation as it is performed in ninety-nine cases out of a hundred by removing as much of the septum as possible should be discouraged and an operation that will limit itself to the deformity only, should be encouraged as the correct surgical procedure. If a submucous operation is done and only so much is removed as to correct the deformity, we are doing all that is required. If we have a deformed limb we do not remove the whole bone, but simply the deformity, and if we apply that principle in the nose we will do well. All these displacements and crushing operations cannot straighten the septum; they correct one deformity and invariably produce another. The operation of the future is that one which is limited to removal of the deformity only.

Dr. Gleason agreed with those who had discussed the paper that the submucous operation was the operation of choice in most cases. Where the operator is skillful and meets with no accidents in the majority of cases one could not ask for better results than can be obtained with that operation. There are, however, undoubtedly cases where the Gleason operation would be better than the submucous one.

Dr. Hurd had said that this operation applies only to deviations in the anterior part of the septum, while as a matter of fact the further back they are the easier it is to reduce the resiliency. Dr. Gleason said that he would not hesitate to do the operation in a case involving two-thirds of the septum, and he had rarely seen one involving more than that. It has been stated that involvement of the entire septum never occurs. He had seen a case in which the deviation involved even the posterior edge of the septum, but these cases are extremely rare. However, if there is a deflection of the upper portion of the septum of course the operation is contra-indicated. He said that he had operated in horizontally-shaped deflections and fractured the bones of the positive deviation with forceps or his finger.

As for the statement of Dr. Voislawsky. Soon after the operation thickening appears at the base of the septum caused by the overlapping of the flap. One of two things will correct the deformity. Either this thickening will be absorbed, so that you will have in some cases a septum that would not be straighter if you had laid down a plumb line, or it is a very simple thing, after the parts have healed, to remove any redundant thickening at the base of the septum with a saw.

PHILADELPHIA LARYNGOLOGICAL SOCIETY.

Regular Meeting, March 18, 1913.

DR. ROSS HALL SKILLERN, CHAIRMAN.

New Instrument for the Treatment of Suppuration of the Antrum of Highmore. Exhibited by DR. E. B. GLEASON.

The instrument shown this evening is for the production and maintenance of a comparatively large opening from the maxillary antrum into the nose beneath the inferior turbinated body, for the treatment of chronic suppuration. It was devised after considerable experience in the treatment of antral suppuration with Wells' trocar and rasp canula.

The instrument is a double-ended trocar, with one end of the probe pointed, the other triangular sharp point. Both ends are slightly curved at the tip end of the diameter of No. 18 of the French catheter scale. On the concave surface for a distance of one and three-fourths inches is a coarse file or rasp so constructed as to cut on the pull. The instrument is designed for the treatment of chronic suppuration only, as acute suppuration unless caused by gangrenous tooth pulps or some other neighboring forms of infection quickly subsides by treatment addressed to the region of the maxillary ostium or a few irrigations of the antrum through a Lichtwitz needle.

Diseased Conditions of the Ethmoidal Region. DR. FRANK EMBERY.

When I say diseased conditions here I mean the word in its broadest sense. I mean it to include adhesive, hypertrophied tissues especially. It has been my experience that a considerable amount of nasal discomfort is due to pressure in this region as well as stenosis of the fronto-nasal duct, the result of hypertrophied tissue and adhesions. We have in the region under consideration the following structures: (1.) Anterior end of the middle turbinate; (2) anterior ethmoidal cells; (3) bulla ethmoidalis; (4) uncinate process; (5) The outlet fronto-nasal duct.

I have frequently seen the anterior end of the middle turbinate so hypertrophied that it completely filled the space between the septum and outer wall of the nose and be in firm contact with both walls, even after applications of cocain and adrenalin. I have seen the bulla-ethmoidalis so large as to force the middle turbinate hard against the septum. The anterior ethmoid cells are frequently enlarged and in contact with the septum. Adhesions between these cells and the septum are not infrequent. Such being the case, you can readily understand how the least irritation and congestion will cause distress, varying from a simple discomfort to intolerable headaches. These headaches are sometimes very intense and give the sensation of a band around the head. Neurasthenia and asthenopia are frequent results. The uncinate process may be overdeveloped and with a moderate enlargement of the middle turbinate or the bulla-ethmoidalis, cause a partial or complete stenosis of the fronto-nasal duct, interfering greatly with the drainage and ventilation of the frontal sinus. These conditions we have all seen probably on many occasions. Of course under such conditions we can only hope for relief by operative procedure.

I have never seen any satisfactory results from chromic acid or other escharotics. We will now take up the various operations.

First the hypertrophied middle turbinate. When the middle turbinate is so much enlarged as to completely fill the space between the septum and outer wall of the nose, it is impossible at least to me to satisfactorily use an instrument like a biting forceps or scissors to make the initial cut in which to place the snare, because when such an instrument is opened there is no room between the turbinate and nasal walls for the blades of the instrument. If you force the blades between the enlarged turbinate and nasal walls you push the ends of the blades into the walls on either side. In 1910 Lentz made for me this chisel. It has a narrow cutting end. It is concaved with concavity looking downward. The end is slightly notched to keep it from slipping and the extremity is slightly curved so that it makes a horizontal cut instead of cutting upward. The notched end is placed so as to embrace the turbinate just at its attachment to the ethmoid. Firm pressure with the fingers engages the cutting edge and a few gentle taps of the mallet (I always use a lead mallet because there is no recoil) sends the instrument into the bone. When you have made the horizontal cut far enough back you gradually elevate the handle, which depresses the cutting edge, and as you gently tap with the mallet you cut downward. You can now by using a little pressure with your fingers force the portion which has been almost detached down into the nostril where there is more space and you can easily place the loop of the snare around as much as you wish to remove and quickly detach it. I have used this chisel many times and it has never failed to do its work. This same chisel can be used to break into the ethmoidal bulla and a cutting forceps will satisfactorily do the work.

For the anterior ethmoid cells I frequently use this rasp. This instrument was made at the same time as the middle turbinate chisel. The extremity is curved. The cutting portion is triangular and has teeth on the two lateral surfaces. It is made only to cut on the draw. This rasp is only used to open these cells and a cutting forceps is used to finish. (I use this rasp instead of the previous chisel because I feel safer in doing so.)

To enlarge the fronto-nasal duct in case of stenosis, I first endeavor to pass a fine applicator properly curved and wrapped firmly with a small amount of cotton, dipped in a 20 per cent solution of cocain and a little adrenalin. As a rule it is necessary to remove the anterior end of the middle turbinate. When I had been able to pass this cotton-tipped applicator into, or almost to the frontal sinus bone I commence with the smallest Sullivan rasp. I then irritate the sinus with a warm normal salt solution. For irrigating the frontal sinus I have found an ordinary silver Eustachian catheter properly curved to be very satisfactory. I have a tip of a two-ounce matchless syringe made to fit the catheter. I have found this method very satisfactory and neat. I usually finish by injecting about 1 drachm of a 10 per cent solution of argyrol.

DISCUSSIONS.

A. H. C. Rowland: I have found that the rasp has certain advantages in the anterior ethmoid region, although I have frequently been able to maintain good drainage with spray of cocain and adrenalin. Diseases of the vicious circle often date back to diseases of childhood. The infraction of the middle turbinate will often establish a good drainage and ventilation. If this is not accomplished by this method, then I remove the anterior third of the middle turbinate with snare and scissors.

Dr. Geo. W. MacKenzie: Dr. Embery spoke of the middle turbinate region of hyperplastic tissue, and did not speak of something which I consider more important. One of the common causes of asthenopia and headaches is hyperplasia with cysts or scrolls of the middle turbinate The middle turbinate may be pressed so firmly between the septum and lateral wall that it is often impossible to snare, even after shrinking with a 20 per cent solution of cocain. In such a case Hajek's hook should be employed, after use of which the turbinate will collapse—the snare or scissors may then be employed to remove the anterior third. Cysts are usually thought to contain pus, but in the large number which I have removed during the past eight or ten years I have not found pus. We can never be too radical in operating in this region.

Dr. E. B. Gleason: Dr. Gleason uses Farnum's alligator forceps in removing the anterior portion of the middle turbinate, also snare and curved scissors, and has used the Ballenger knives on the cadaver, but never on the living.

Treatment of Secondary Hemorrhage Following Operations on the Nose and Throat. Dr. P. S. Stout.

Secondary hemorrhage following operations on the nose and throat are by no means of rare occurrence. One operator at the last meeting of the American Medical Association reported fifty cases of fatal hemorrhage. Just how many of these were secondary hemorrhage I do not know.

I will first speak of the nose, and then of the tonsils and adenoids. In the beginning, I wish to state that I have drawn freely from such writers as Ballenger, Phillips, Gleason, Smith, Piersol and Packard. Secondary hemorrhage following nose operations may be looked for at any time, whether the operation is slight or of an extensive character. If no packing was used after the operation, as is now frequently practiced and blood oozes from around the clot, it is best to wash out the nostril thoroughly and then inject hot water, temperature around 130° F. or ice water, being careful, however, not to use too large a quantity. After the nostril is clear of blood, look quickly for any bleeding point. If you discover one, apply adrenalin solution, peroxid of hydrogen, or solution of tannic and gallic acid. If bleeding still continues, then some form of packing should be used. Berney Simpson splints or narrow pieces of gauze packed in both nostrils usually will suffice. However, sometimes even after this bleeding still continues. It then becomes necessary to remove the packing, and pack the posterior nares by means of Bellocq canula, and further support this by packing the anterior nares. These tampons should not remain *in situ* more than twenty-four hours. If bleeding still continues horse serum injections should be used, as the probabilities are you are dealing with a hemophiliac.

Dr. Stout discussed hemorrhage following the removal of adenoids and tonsils and the value of thrombokinase in the control of persistent oozing following tonsil operations and as a final resort, the tying of the external carotid.

DISCUSSION.

Dr. Geo. H. Coates: Hemophilia is a rare disease, and the ordinary cases of oozing and secondary hemorrhages that we get are not true hemophilia but the result of delayed clotting. I think that if the clotting time is delayed over seven minutes there is more or less hemorrhage. I had a case at the Pennsylvania Hospital a few days ago, a young girl, on whom I performed a tonsillectomy, the hemorrhage lasting from two to three days. This was a case of true hemophilia. The history showed that a number in the family had been bleeders. Animal serum which was used in this case saved her life. Regarding the use of thrombokinase, you must have a fresh supply on hand, as it only keeps a week. In tonsillar hemorrhage, if uncontrolled by pressure, then one can suture the pillars and use the perforated shot.

Dr. Ross Hall Skillern reported a primary hemorrhage in a case of tonsillectomy, in a girl of 18 years, under ether narcosis. The hemorrhage was controlled by clamping and suturing.

Dr. E. B. Gleason: Dr. Gleason spoke of controlling hemorrhages from the septum by the use of Simpson's cotton splints, or cotton wound around an applicator, and then saturated with peroxid of hydrogen wedged into the nares, and in tonsil hemorrhage, digital pressure with two or three small sponges, removing one after the other to find the seat of hemorrhage.

Dr. Wm. A. Hitschler believes that the majority of accidents, especially in tonsil operations are due to the fact that there is a failure to treat them as hospital cases; they are operated at the office under local anesthesia; they are not put at rest, or under strict regime. He has his patients lie on their faces so that a slight hemorrhage may be detected by the staining of the pillow.

Dr. Geo. W. Mackenzie: I have been doing operative work on the nose for a number of years, but cannot recall a single bad hemorrhage. I keep the patient quiet in the office for a period long enough to have the effects of the cocain and adrenalin wear off (two to three hours), and in that time if there is to be any hemorrhage it will be detected. I do not see why we should fear hemorrhages in the nose, as pressure on the bleeding point will stop any hemorrhage. In case of septum operations or spur operations, we sometimes have difficulty in finding the bleeding point. I use gauze instead of cotton, as the splints will often soften up and you do not get the pressure on the spot as you will from gauze. In tonsil hemorrhage, if it is persistent, I advise suturing, and caution against tonsil clamps, as necrosis may follow their use.

Report of a Case of Thiosinamine Poisoning. Dr. Wm. A. Hitschler.

Otologists everywhere will welcome any remedy which proves of value in otosclerosis or the various chronic adhesive processes of the middle ear. The futility of our efforts along this line is duly and properly recognized by otologists themselves. With respect to the chronic adhesive processes, while we may say, in all truth, that the fault lies rather with those concerned in the recognition and treatment of the cases in their early stages, i. e., the acute catarrhs and suppurations, nevertheless it would be a boon to many unfortunate sufferers from tinnitus and deafness could we rectify the damage done by even unintentional neglect.

Of the classical remedies employed, classical only because of their time-honored employment and not because of their efficiency, none has ever inspired much enthusiasm or hope, due regard being given to the exceptions to all rules. It is therefore a matter of no surprise that a new remedy is welcomed.

Some years ago thiosinamine was highly recommended as an agent for the absorption of scar tissue. Tousey states that thiosinamine has positive curative properties in causing resolution of benign and malignant tumors and the absorption of cicatricial tissue, it acts specifically upon certain abnormal tissues, causing their absorption or conversion into normal tissues, is of great value in the removal of cicatricial contractions following lupus or any other cause of loss of substance, contractions from burns, corneal opacities and keloid yield to its action. I have been using thiosinamine is diseases of the middle ear since 1907. At first I used it internally only, and later combined the internal administration with the local injection into the middle ear by way of the Eustachian tube. Whether it has been of any real value or not I am not prepared to say. Some cases have shown improvement after other methods had failed, some have shown no change, while others have grown worse. Naturally the effect of local treatment, e. g., inflation, etc., can never be separated from the general results in the cases in which I have tried it, since I have always combined the local treatment with the administration of the drug. It is, however, concerning its toxicity that I wish to call your attention. The earlier observers declared it to be practically harmless. Later, Hayn and Clifford reported cases of poisoning with the following symptoms: violent vomiting, nausea, rigors, cardiac weakness, rapid pulse and fever. Unusual symptoms were apathy, headache, muscular prostration and a purpuric rash in the skin and mucous membranes. In one of my cases, increased cardiac action was noted which disappeared upon the withdrawal of the drug, reappeared upon its repeated administration, and again disappeared upon its withdrawal. Another case I would report more in detail. The patient was a dentist, age 50, in excellent physical condition. Diagnosis, otosclerosis and chronic adhesive processes with some obstruction to the Eustachian tube. The tinnitus was of six or eight years' duration, the deafness ten years. No paracusis Willisi. The usual methods were employed, such as injection *per tubam* of pilocarpin, vaseline, etc., and the passage of the bougie. But slight improvement resulted. The patient consented to the employment of thiosinamine, having been duly informed of its experimental nature. At the beginning I used a half grain internally t. i. d. with instructions to gradually increase the dosage. For a period of four years he took, not continually but at more or less frequent intervals, from a half to three grains daily. Gastric irritation, a garlic odor to the breath, and a loss of weight were noted before any decided toxic symptoms manifested themselves. These latter began as a bilateral nasal hemorrhage followed the next morning by hemorrhagic patches on the gums at the junctions with the teeth, on the tongue, the buccal membrane and the mucous membrane of the hard and soft palates, varying in size from 1 mm. to 1 cm. in diameter, also a large number of areas in the skin of the face, arms, legs and body, from 1 mm. to 4 cm. in diameter. The patches were elevated in the mucous membrane but not in the skin. The urine was loaded with blood, but no casts nor renal epithelium were found. The epistaxis was confined to Kiesselbach's spot on each side of the septum. No hemorrhage occurred in the drumheads or conjunctivae. There were no ocular or cerebral symptoms. A large amount of blood was lost and considerable weakness noted. The patient's home was forty miles from Philadelphia, and at the onset of the toxic symptoms he was placed in bed and treated by his local physician. On the third day, the nasal hemorrhage continuing and becoming alarming, he left his bed against medical advice and came to see me at my office. It was necessary to use the electric cautery to check the hemorrhage. He returned home, went to bed, for a few days, and in less than three weeks showed no sign of purpura or hematuria. The loss of weight was soon recovered. As far as the effect on the ears was concerned his tinnitus was not so noticeable, the deafness was increased in the left ear, but improved in the right.

Gun-shot Wound in Ear. K. Kirchner, *Monatschr. f. Ohrenh.*, Heft 1, 1913, p. 7.

The accident was followed by an illness of two months, and pronounced, intense vertigo when the head was raised. Nine months after the injury the projectile was removed; after nine weeks the drum membrane had cicatrized and the hearing was improved. But even at the present writing (three years after the injury) the patient has attacks of vertigo, nausea and headache. Ed.

BOOK REVIEWS.

Handbuch der speciellen Chirurgie des Ohres und der oberen Luftwege. Edited by Drs. L. Katz, H. Preysing, and F. Blumenfeld. Bd. 1, Haelfte 2, Lieferung 4-5, price M. 8.50; Lieferung 6, price M. 4.50; Bd. 2, Lieferung 4-5, price M. 6.50. Curt Kabitzsch, Wuerzburg, 1912.

Since our last review of this classical series of monographs comprising the "Handbuch der speciellen Chirurgie des Ohres und der oberen Luftwege," edited by Katz, Preysing and Blumenfeld, probably the most important and valuable series of special monographs as yet published in oto-laryngology, a large number of additional contributions have been made to this "Handbuch." For a review of the previous publications of this classic work, we refer our readers to page 750, June, 1911; page 1208, December, 1911 and page 78, January, 1913.

Our present review of the second half of volume 1 begins with monograph E by Prof. A. Kuttner of Berlin: "Roentgen diagnosis in diseases of the accessory sinuses, hypophysis, teeth and ears." The author records minutely the historical and chronological development of roentgen technic as applied to our specialties, beginning with the work of Scheier and Glover in 1896 and 1897 and extending to the improved technic of today. Apparatus and technic are carefully described and illustrated and the latest phase of the question, namely stereoscopic radiograms after Bruenings and others are indicated. The reproduction of radiograms is uniformly good and especial attention is directed to the presentation of that phase of the question referring to the pathology of the hypophysis. Radiography of the mastoid could well have been given more minute consideration.

In the next section Prof. Edmund Meyer considers phlegmonous inflammations of the upper air tract.

Erysipelas in its relation to the nose and extension into the pharynx, peri-tonsillar and retro-pharyngeal abscesses, and phlegmonous inflammations of the larynx and of the neck are carefully considered in their etiology, surgery and therapeutics.

Septic disease of the naso-pharynx and of the ears, mucosa of the pharynx, tonsils and larynx, and intra-cranial complications of otogenic sepsis are carefully treated in the concluding monograph of the second half ot volume I.

No phase of septic invasion in oto-laryngology seems to have been overlooked and the recent pathology of the Klebs-Loeffler bacillus as a general germ-carrier and of streptococcic invasion of the tonsils in its relation to the general system, its complication of acute nephritis and endocarditis, the Plaut-Vincent bacillus, serum therapy, lumbar puncture —all is subject-matter indicative of the thoroughness and minuteness of this exhaustive treatise.

Owing to the irregularity with which these monographs are published in their regular series it is difficult to have their review follow in numerical sequence.

The first and only monograph of volume 2 as yet issued is that by Prof. Voss on "Injuries and surgical diseases of the external ear." Classified under (A.) auricle the author devotes separate chapters respectively to (1) malformations and their correction; (2) injuries, in which burns and frost-bites are presented in interesting form, and ot-hematoma, with excellent pathological data and microscopic sections; (3) inflammations wherein experimental research with the injection of fresh pyozyaneus and pneumococcus into the auricle of rabbits and their results are given; (4) erysipelas; (5) noma; (6) tuberculosis; and (7) tumors. B. External auditory canal is classified under (1) malformations; (2) injuries; (3) acquired atresia and stenosis; (4) inflammations; (5) abnormal conditions of the cerumen; (6) foreign bodies; and (7) neoplasms.

Operationen am Ohr. Die Operationen bei Mittelohreiterungen und ihren intrakraniellen Komplikationen. (Operations on the ear.) By DR. B. HEINE, Munich. Third, revised edition. Pp. 232 with 29 illustrations in the text and 7 plates. Price, Mk. 8.80. Verlag S. Karger, Berlin, 1913.

This third edition of an excellent working-manual on operations on the ear includes the following new chapters: Consideration and value of roentgenology in mastoiditis. The Passow-plastic for closing post-auricular fistulae. (The author evidently overlooks other plastic methods which have been devised and successfully employed.) The so-called conservative, radical operation, examination of the blood in sinus thrombosis, functional test of the labyrinth. The chapter on the surgery of the labyrinth is entirely rewritten. The author emphasizes the importance of prompt and free incision of the membrana tympani, of early operations on the mastoid following acute middle-ear suppuration; he opposes closure of the wound after the acute mastoid operation without tamponage and does not favor the too schematic indications for ligature of the jugular. He has discarded compression-thrombosis as a specific form in the classification of sinus thrombosis.

Zur Klinik der Eiterungen des Ohrlabyrinths. (Suppuration of the Labyrinth.) By PROF. DR. W. UFFENORDE, Goettingen. Pp. 103, with 9 plates. Price, Mk. 5. Verlag Curt Kabitzsch, Wuerzburg, 1913.

The author presents in this monograph his personal, practical and experimental experiences in the field of labyrinthine suppuration, its diagnosis and therapy.

There is much of individuality and personal equation in this presentation, and also a critical discussion of the views and technic of other authorities who have individualized their work in this field.

Labyrinth Papers. By DR. GEORGE W. MACKENZIE, Philadelphia. Pp. 222. Price, $2.00 Examiner Printing House, Lancaster, Pa., 1913.

The papers contained in this volume of 222 pages were presented to various societies and published in various journals between June, 1908, and February, 1911.

They are: diagnosis and treatment of labyrinthine suppuration; report of two cases of labyrinthine suppuration; differential diagnosis in labyrinthine suppuration; differentiation of labyrinth suppuration from cerebellar abscess; differentiation of labyrinth suppuration from affections of the eighth nerve; prognosis and treatment of labyrinth suppuration; physiology and pathology of the non-acoustic or so-called static labyrinth; and labyrinth fistula.

A graceful foreword is written by Dr. Gustav Alexander of Vienna to whom the collection is dedicated by the author.

There are a number of typographical errors and some of the subject-matter presented has already been supplanted by more recent theories. It is an interesting series of papers, however, and well worthy of perusal.

Contribution a l'etude de l'Otologie francaise au cours de ces cinquante dernieres annees. (French otology during the last fifty years.) By DR. C. CHAUVEAU, Paris. Volume 1. Pp. 455. J.-B. Bailliere et Fils, Paris, 1913.

This is the first volume of a series undertaken by the author to present the development of otology in France during the past fifty years. The well-known work of Dr. Chauveau as an oto-laryngological historian and critic requires no further reference. It is indeed a labor of love and the work of a lifetime.

The data contained in this work is classified according to subject and not by authors and their publications. The first part includes anatomy, physiology, methods of examination, general pathology, symptomatology and treatment. The second part comprises diseases of the external, middle and internal ear, and additional chapters on deaf-mutism and diseases of the ear in medico-legal aspects. An introductory chapter has been written by Hofrat Politzer.

We may judge of the extensive character of this work on laryngology in France by citing that the bibliography contains 92 pages and over 3,000 individual references. The present volume contains only the anatomy and physiology of the ear.

This is a companion series to the author's classic contribution on "History of diseases of the pharnyx," and we trust that he may bring the present series to an equally successful issue.

Causes and Prevention of Deafness. Four lectures delivered under the auspices of the National Bureau for Promoting the General Welfare of the Deaf. By Dr. J. Kerr Love, Aural Surgeon, Glasgow Royal Infirmary, etc. London, 1913. Price, post-free, ½.

This pamphlet of 127 pages consists of a series of four lectures delivered under the auspices of the national bureau for promoting the general welfare of the deaf in England. These lectures were given during the winter of 1913-1914 and are issued in this pamphlet form to make them accessible to all who are in sympathy with this great movement for the prevention of deafness. So eminent an authority on this question as Dr Love should be assiduously read, and his council carefully considered.

Preventive medicine is as vital a factor in the fight for the amelioration or elimination of conditions that produce hereditary deafness as in the case of syphilis or tuberculosis.

These lectures comprise: 1. The nature and consequences of deafness. 2. Classification of deafness and the prevention of acquired deafness. 3. Sporadic congenital deafness and deafness from syphilis. 4. True hereditary deafness.

We urge every reader of The Laryngoscope to secure a copy of the pamphlet. It can be obtained from the National Bureau for Promoting the General Welfare of the Deaf, 104 High Holborn, London, W. C.

Die Ermuedung der Stimme (Phonasthenia). By Dr. R. Imhofer. Prague. Pp. 132. Price, Mk. 5. Curt Kabitzsch, Wuerzburg, 1913.

Phonasthenia or "voice-fag," is a functional disturbance of the voice-producing mechanism that has received but scant attention in practical laryngology. Probably only laryngologists who treat numerous profession singers are brought into frequent contact with this condition.

The author presents an exhaustive monograph of five chapters in which he considers: I. The historical development of phonasthenia, giving Flatau of Berlin credit for its scientific introduction in 1906 and tracing its development and citing various publications in their new bearing on this question. 2. The clinical picture of phonasthenia is defined and described in detail. 3. Statistics and etiology form an interesting chapter in which the author presents, (a) voice-strain; (b) faulty register in singing; (c) errors in breathing; (d) faulty position of the larynx; (e) errors in tone-placing; (f) "coup de glotte;" (g) incorrect position of jaw, lips and buccal muscles; and (h) open throat. 4. This chapter considers the diagnosis and prognosis. 5. The concluding chapter treats of the theraphy of phonasthenia. The monograph is of more than passing interest especially to the laryngologist who has a large clientele of professional singers.

Bacterial Diseases of Respiration, and Vaccines in their Treatment. By Dr. R. W. Allen, London. Pp. 236, illustrated. Price, $3.00 P. Blakiston's Son and Co., Philadelphia, 1913.

Most of the matter contained in this book has already appeared as a series of articles in the *Journal of Vaccine Therapy*, of which the author has until recently been the editor. So much of our recently developed data in the etiology of diseases of the respiratory tract is based upon bacterial findings that this publication must be considered as distinctly timely and important, especially as it emanates from the pen of an author of long and practical experience.

The author crystallizes the necessity and value of such bacteriological work and its publication in this concrete statement: "Despite the great impetus given to exact bacteriological research by the developments of vaccine therapeutics, especially within the past few years, the omission has not yet been repaired in any single book or collection of books to which I have had access. The true importance of any disease is to be estimated neither by its rarity nor by its mortality-rate, but rather by its frequently and its disabling power. Granting the truth of this statement, it follows that diseases of the respiratory tract are of supreme importance to the human race; in frequency they excel all others, in the production of impaired health of varying periods and to varying extents they are fruitful to an extreme degree. It has occurred to me that a brief but sympathetic description of the bacterial diseases of the respiratory tract would have a certain value and prove of interest to many."

An idea of the subject-matter comprising this work may be obtained from an enumeration of the titles of its eleven chapters: 1. Bacteriology of the respiratory tract in health. 2. Respiratory tract in disease; methods of investigation; technic. 3. Cultural methods for investigating the bacteriology of the respiratory tract. 4. Results of observations into the bacteriology of the various diseases of the respiratory tract. 5. Vaccine therapy of respiratory disorders. 6. Vaccines in the treatment of nasal and post-nasal catarrh, tracheitis and laryngitis, and infections of the accessory spaces. 7. Vaccines in the treatment of bronchitis and asthma. 8. Vaccines in pneumonia, technic and results. 9. Vaccine in whooping-cough, diphtheria, hay-fever, ozena, rhinoscleroma. 10. Mixed infections of pulmonary tuberculosis and vaccines in their treatment. Import of mixed infections. 11. Infections by the tubercle bacillus and the use of specific products in their treatment. The tubercle bacillus and its toxins. Tuberculins and their use.

There are many interesting conclusions as the result of the author's experience. The etiology of all common colds is claimed to be on a bacterial basis. Vaccine therapy is enthusiastically endorsed in the treatment of all affections of the respiratory tract definitely traced to bacterial origin. Immunizing by vaccines is emphasized.

It is not only a practical working-manual for bacteriological research but the expression of personal investigation by an experienced pathologist who has devoted the past ten years to a careful study of this field.

Lehrbuch der Sprachheilkunde (Logopedie) fuer Aerzte, Pedagogen und Studirende. By Dr. Emil Froeschels, Vienna. Pp. 397, with 100 illustrations in the text and five plates. Franz Deuticke, Leipzig, 1913, price, M.13.

The fields of defects of speech considered both from their central and a peripheral origin are being brought into more and more intimate practical relations with the work of otologists and laryngologists.

The present monograph is the product of an otologist of long-standing and excellent training who has devoted much time and study to the question of the deaf child and its development. He presents defects of speech from every view-point, considering first the anatomy and physiology of the organ of hearing and of the nose, accessory cavities and other organs concerned in the production of speech.

Then follow chapters on the physiology of proper breathing with practical notes on graphic annotations, on the use of the pneumograph, spirometer, breath-volumeter, etc.

Chapter IV presents the physiology of the voice; chapter V, the physiology of articulation; VI, registrations of speech; VII, voice-modifications and accents; VIII, evolution of speech in the child. This last chapter is elaborated with much care and describes central localization, comprehension of vowels and words, and the relation of sight to the comprehension of speech. In chapter IX much valuable information is presented on the practical general examination of individuals with speech defects. Chapter X is an important contribution on deaf-mutism and speech-defects in the hard-of-hearing. It is in this field that the author has developed his most efficient work.

Mutism due to mechanism or pathology of the tongue, hare-lip, cleft-palate, adenoid vegetations or motor disturbances constitute chapter XI.

Mutism in the feeble-minded, aphasia, stammering and stuttering are presented respectively in carefully considered chapters.

Hygiene of the voice in speech and song, systematic speech-defects, and speech defects in nervous diseases conclude this excellent work.

This monograph is of much value to teachers and advisors of patients with defects of speech in any of their varying phases and justifies the careful study of every oto-laryngologist interested in this field.

Stammering and Cognate Defects of Speech. By C. S. BLUEMMEL, Boulder, Colo. Volume 1: The psychology of stammering, pp. 365, volume 2: Contemporaneous systems of treating stammering, their possibilities and limitations, pp. 391. Price, $5.00. G. E. Stechert and Co., New York, 1913.

Speech defects in their various types are being more definitely and more practically considered as a department in the ever-increasing field of work in oto-laryngology and to-day there are quite a number of men in our special field who are concentrating their energies and talents almost entirely in this direction.

Stammering and cognate defects of speech are here presented in two exhaustive volumes. Volume 1 treats of the psychology of stammering and volume 2 discusses contemporaneous systems of treating stammering, their possibilities and limitations. The psychology of stammering as viewed by the author is analyzed from the various theories of causality that are fundamentally at the basis of such defects. This volume discusses such theories, seriatim and in detail.

In volume 2 the writer presents a review of the various systems employed in Europe and in America in the treatment of stammering, laying especial emphasis upon the methods contemporaneously employed. This volume includes a valuable commentary upon many of the systems of treating stammering at present in vogue. He also considers respiration, vocalization, articulation, verbal exercises, mechanical appliances, psychological methods, stammering schools, and concludes this practical treatise with a very comprehensive glossary on stammering, stuttering and other speech-defects.

Atlas der Entwicklung der Nase und des Gaumens beim Menschen mit Einschluss der Entwicklungsstoerungen. (Embryological Development of thte Nose and Gums in Man.) By DR. KARL PETERS, Griefswald. Pp. 130, 189 illustrations. Price, Mk. 20. Verlag Gustav Fischer, Jena, 1913.

Embryological development of the nose and gums in man including the embryological abnormalities is the interesting contribution of Dr. Karl Peters of Greifswald. It is especially acceptable at this scientific psychological period where so much research and new work is being done in the anatomy, comparative anatomy, topographical anatomy and pathology of the nose and its accessory spaces. The latest decade has seen a remarkable activity in the development of this field of our science and this excellent original contribution on embryological development of the nose and accessory tissues is a fitting complement to these other fields of research.

The author presents his contribution as an atlas of the embryology of the nose. In point of fact the atlas is preceded by a well-written dissertation of 130 pages on the embryology of the nose in which a chronological description the development, a consideration of the malformations and embryological defects, important data of measurements in the period and development of the fetus in relation to the nasal development, and a complete bibliography are presented. The 189 figures are for the greater part original drawings made under the direct supervision of the author.

To the close student this volume presents many interesting phases of nasal embryology and presents the most important factor of any publication,—originality.

Vocal Atlas Designed for Teachers and Students of Singing and Speaking. By Dr. Frank E. Miller, published by Holmes W. Merton, New York. Pp. 16, with illustrations in the text and colored plates. G. Schirmer, New York.

Laryngologists especially interested in the treatment of professional singers and speakers should have a copy of this vocal atlas.

This atlas portrays the different positions of the vocal organs in tone-production and in progressive series. The illustrations are made from life and from dissections under the supervision of Prof. G. S. Huntington of the College of Physicians and Surgeons of New York.

The anatomy and physiology of the relation of the voice-producing organs when presented in accurate color-plates as those contained in this handy atlas should be of especial value and assistance to every professional singer and speaker who seeks an intelligent comprehension not only of the actual production of song and speech but also of its definite mechanism.

Manual of Otology. By Gorham Bacon, M. D., New York. Sixth edition, revised and enlarged. Pp. 536 with 164 illustrations and 12 plates. Price, $2.25. Lea and Febiger, Philadelphia, 1913.

The sixth edition of this manual presents the following revisions: The articles on suppurative labyrinthitis, submucous operations on the nasal septum, otosclerosis, enucleation of the faucial tonsil, vaccine therapy, examination of the cerebro-spinal fluid,—all have been rewritten or recast. New illustrations have been added and a number of important case-histories inserted. These revisions have brought the present edition of this popular manual up to date.

Die Untersuchung der Luftwege. (Examination of the air passages.) By Dr. P. H. Gerber, Koenigsberg. Pp. 45 with 49 illustrations in the text and 12 illustrations on four plates. Price Mk. 2. Curt Kabitzsch, Wuerzburg, 1913.

This is an address presenting the modern methods of examining the upper air passages. The purpose of the address, as the author states in the preface, is to introduce to a large circle of the profession the present progress in the methods developed in the examination of the upper respiratory tract of patients, and as he further expresses it, "the dawn of rhino-laryngo-tracheo-brochiology."

This is an interesting, up-to-date, well-illustrated monograph in which all the latest technic and apparatus employed in the examination of the respiratory organ are set forth. It presents a chronological picture in word and photograph of the evolution of rhinoscopy and laryngoscopy.

Relation of the Lacrimal Organs to the Nose and Nasal Accessory Sinuses. By Prof. Dr. A. Onodi, Budapest. Pp. 24, with photographic reproductions, in natural size, of 45 preparations. Price, $4.25 net. William Wood and Co., New York, 1913.

The latest publication of this eminent authority on the nasal accessory sinuses to claim our attention is the present volume on the "Relation of the lacrimal organs to the nose and accessory sinuses."

This is a monograph of twenty-four pages and forty-five splendid illustrated plates with explanatory text. The topographical anatomy, pathology, therapy and surgery of the lacrimal organs in relation to the nasal cavities is minutely described. An unusual and ingenious feature of this publication is its publication simultaneously in German, French and English. The English translation has been done by Dr. Dan Mackenzie of London, and the French by Dr. Bellin of Paris. The monograph is presented first in the original German, followed by a literal French translation, and concluded by the English version.

The descriptive subject-matter accompanying the text is printed in each of the three languages on the same page. This volume, therefore, has the advantage of being readily accessible to every reader in oto-laryngology and becomes, thus, a universal, scientific publication.

The value of such a contribution both for its original text and for its clever presentation cannot be over-estimated.

Lang's German-English Dictionary of Terms used in Medicine and the Allied Sciences. Second edition. Pp. 563, edited and revised by MILTON K. MEYERS, M. D., Philadelphia. Price, $5.00 net. P. Blakiston's Son & Co., 1913.

A good English dictionary of terms used in medicine is a great necessity to every close student of oto-laryngology, as much of the important literature of our field is published in German and must be read *in extenso* to be thoroughly appreciated.

This volume is not an unabridged production of its kind, but contains an up-to-date arrangement and a comprehensive list of words and terms found in German medical literature.

The Tonsils and the Voice. By DR. RICHARD B. FAULKNER. Pp. 381. Price, $2.00. The Presbyterian Book Store, Pittsburgh, 1913.

We beg to acknowledge the receipt of a review copy of this book.

Laryngectomy for Cancrr. G. W. CRILE. *Ann, of Surg.*, Aug. 1913.

Two conditions arise in regard to the curability of cancer of the larynx,—is it intrinsic or extrinsic. The intrinsic variety lends itself readily to cure by operation. Crile has performed twenty-seven laryngectomies for cancer with two operative fatalities, one death from mediastinal abscess, the other from necrosis of the trachea with consequent septic pneumonia. The speech-defect, disfigurement and predisposition to pulmonary disease following the operation may be disregarded. In many cases he has been able to dispense with tracheotomy both at the time of the operation and subsequently. The anaesthetic of choice is nitrous oxide. He does a preliminary tracheotomy so that at the time of the laryngectomy the trachea is fixed in position; he uses at the operation novocain as local anesthetic to the skin and tissues over the trachea, and also to mucous membrane of larynx. PACKARD.

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